

THE GREAT LOCUST TREE.

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BEAUTIES AND WONDERS

OF

Vegetable Life;

OR, RAMBLES IN

PARKS, FORESTS, CONSERVATORIES, ORCHARDS, GARDENS, FIELDS, AND HEATHS.



WITH NUMEROUS ILLUSTRATIONS.

'Tis sweet to muse upon the skill display'd—
Infinite skill—in all that God has made;
To trace in nature's most minute design
The signature and stamp of power divine.

LONDON:
THE RELIGIOUS TRACT SOCIETY,
56, PATERNOSTER ROW; 65, ST. PAUL'S CHURCHYARD, AND
164, PICCADILLY; AND SOLD BY THE BOOKSELLERS.



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I.

The Wayside.

Not a tree,
A plant, a blossom, but contains
A folio volume. We may read, and read,
And read again, and still find something new;
Something to please, and something to instruct.

THE WAYSIDE.

Botany an attractive and healthful study—Its classification—Language and poetry of flowers—National emblems obtained from the vegetable kingdom—The connexion of the study with art and science—Scripture references.

THE bright months of the year bring with them a thousand proofs of the power and goodness of God in creation. All nature then awakes from its sleep, and every object invites us to go forth and admire its wonders. Myriads of insects glance in the sunbeams, and butterflies in richest dress flutter over newly-mown meadows. Bees collect their honeyed stores from fields of clover, or hover over tufts of lemon-thyme and beds of sweet marjoram. Flowers and plants display their varied and brightest tints; and trees are arrayed in all their beauty of leaf and blossom.

At such a season we love to penetrate the deep glade of the forest, or recline on green slopes under the trees in the park, or walk along the wayside hedgerows; and then, in contrast to the simple wild-flowers that grow there, to enter a conservatory, and gaze on the curiosities and marvels of vegetable life.

The study of these works of God can scarcely fail to extend our knowledge and enlarge our pleasures. The changes which we constantly see taking place, from the time when the first shoots appear till the plant displays its blossoms or offers us its rich fruits, together with the shapes, colours, and qualities of the various tribes, as well

as the gratification they yield to our senses, all combine to make our investigations an agreeable recreation.

Nor should we fail to notice, that it is a study open to all —throughout all time, in every place, and to all classes of people. "The volume of creation," says Lord Bacon, "unfolds its pages, written in the only language which hath gone forth to the ends of the earth, unaffected by the confusion of Babel." Some pursuits are closed to the poor and unlearned; but hedgerows and heaths, woodlands and forests, present their lessons to the peasant as well as to the peer. Then, too, some branches of knowledge are apt to tempt the student to intrude upon the hours of the night, and injure health; but this will lead him beneath the bright sunshine into the open air, along the meadows and valleys, and up the hill sides; and, while it pleases his fancy and enriches his mind, it will promote his cheerfulness, and increase his strength.

More than one hundred thousand trees, plants, and flowers give endless variety to our investigations. The young learner may begin with those most familiar to him; then advance step by step to others; and as he goes along he will meet with wonders before unknown. Like a traveller ascending the Alps, he will find that not a height he gains, but other prospects rise on the view. The more he knows, the more he will desire to know; and the better he will perceive what sources of pleasure are open for his use.

Other volumes treat of botany in its scientific and classified form: this little book will be popular and unartificial in its arrangement and style. A full knowledge can only be attained by extensive reading, much study, and careful examination of the natural objects: a cursory acquaintance, however, may prepare the way to the more complete investigation. It is here only necessary to offer

the introductory remark, that the word *Botany* is derived from the Greek, and means "grass," or "herb." Linnæus, one of the most eminent writers in this branch of knowledge, arranged many thousands of objects included in this study into twenty-four groups or classes. This was done to secure order and system; without some such plan there would have been entire confusion in treatises written on the subject. The manner in which all plants were classed by him was according to the number of the *pistils* and *stamens* found in the flower of a plant. A pistil is the little column or stalk in the middle of a blossom,—the stamens, or "threads," grow round it, and contain a yellow powder called *pollen*, which is necessary to the fruitfulness of the plant. A Greek name was given to each of the twenty-four classes:—as *Monandria*, one stamen; *Diandria*, two stamens; *Triandria*,



CLASS III.
Triandria.



CLASS IV.
Tetrandria.



CLASS V.
Pentandria.

three stamens; and so on. Each class is again divided into "orders," or families; and every order has a more or less number of plants called by Latin names; for instance, *Amaryllis lutea* is the yellow lily of Palestine; *Quercus rubra* is the red oak; *Rosa centifolia* is the hundred-leaved rose.

Another mode of classification is called the *natural* system, and is now chiefly in favour with botanists. By it plants are grouped or arranged as they generally agree one with another in structure and form, without any special regard to the stamens and pistils.

One reason for the adoption of the Greek and Latin names is, that the students of different nations may recognise the plants by the same words of the same language. Some of the names have reference to the botanists who first discovered or described the plants; others to the place where they were found, to the colours of the flowers, or the shape of the leaves, or some other points which distinguish the several productions.

There may be, at first, some difficulties to overcome from this classical style of naming plants; but, when surmounted, the way is plain and easy, and plants and flowers then become among our most pleasant instructors.

There are, however, common English names belonging to a considerable number of plants; and many have familiar ones, from some real or supposed qualities they possess, or from pastoral associations. Thus, the pansy is called the heart's ease; the clematis is known as the traveller's joy; a little white-flowered grass is said to be the shepherd's needle; and another small plant is the shepherd's purse; rue is the herb of grace; the mistletoe is the all-heal; and the meadow-yarrow was formerly termed the soldier's woundwort, because of its supposed virtue to cure wounds made by a spear. These fanciful names are part of the language or poetry of flowers. Indeed, in all ages, among almost all people, these beautiful objects of nature have been used as emblems of the various feelings and passions which move the human heart. In the east the language of flowers has been brought into a regular system.

> In eastern lands they talk in flowers,
> And they tell in garlands their loves and cares;
> Each blossom that blooms in their garden bowers,
> On its leaves a mystic language bears.

A nosegay arranged with care and art can be almost as

easily interpreted as a well-written letter. Separate trees and flowers have distinct meanings, and in their combinations express sentiments. In Arabia the aloe denotes patience; the hyacinth is the symbol of joy, and is worn at weddings by modern Greeks. In Egypt the rose is expressive of silence; and in Persia, of beauty. The forget-me-not is regarded in Turkey as the flower of death, and is planted on the grave; and over it is the cypress, which in that land denotes immortality. Even the people of more western and northern lands have indulged their fancy in associating flowers with human feelings and passions. Thus the rosemary is the symbol of fidelity, and is used in wedding garlands and in funeral wreaths. The myrtle is a sign of love and festivity; the violet, of humility; the white lily, of purity; the sensitive plant, of timidity; the daisy, of innocence; the tulip, of pride; the moss-rose, of beauty; the red poppy, of short-lived pleasure; the lily of the valley, of happy contentment; and the snowdrop, of friendship. And in this way the poets become much indebted to trees and flowers for many of their beautiful thoughts and images.

Different countries, also, have borrowed their national emblems from the vegetable world. The date-palm was the symbol of the land of Judea, the olive of Athens, and the lotus flower of Rhodes. The rose is England's chosen emblem; the thistle of Scotland, the shamrock of Ireland, and the humble leek of Wales. On the shield of Portugal appears the lily; and for ages France bore on her flag the fleur-de-lis, or iris; this latter symbol distinguished the royal Bourbon family: while the floral sign of the followers of Bonaparte was the violet. In a similar manner Scottish clans have adopted the heath, or broom, as a badge; while others have taken the yew, the cranberry, and a sprig of holly. The name of Plantagenet, so famous in English

history, was derived from a sprig of the broom plant (*planta genista*), which was worn in the cap, or head dress, by the royal house of Lancaster. This house afterwards adopted the red rose as its sign; whilst its rival for the English throne, the house of York, took the white rose. A coronet of oak leaves formed the crown for the winner in the games of ancient Greece; and a crown of laurel was carried before the triumphal car of a Roman conqueror. While in modern times coronets of bay leaves have been placed on the heads of poets, and of olive on the brows of victors.

The study of botany has been made subservient to the useful and the practical. Architecture has derived from it suggestions for some of its ornaments. Leaves of the olive, the laurel, and the lotus, are found freely sculptured on the



ruins of ancient Egyptian buildings. Solomon's temple at Jerusalem had carvings on the columns of "pomegranates, and palm trees, and open flowers;" and similar ornaments

were on other famous buildings of former ages. The capital, or top of a Corinthian column, is adorned with carved leaves, which, it is said, had an origin in the following way: A basket was placed on the grave of a young maiden by her nurse, filled with articles in which she took delight while living; these were covered with a tile. The basket was placed on a young acanthus plant, which, though pressed by the weight, shot forth its leaves around it. A Grecian architect passing in the spring of the year, was attracted by the sight, and formed from it the ornamental headings for the columns to a temple which he was building at Corinth.

Manufacturers have found in these natural objects some of their choicest designs for various works of art and utility. Science, also, has received from the vegetable kingdom many most valuable hints. When the great engineer, Smeeton, was preparing to build the Eddystone lighthouse, he wished to unite strength and height, and took for his model the trunk of a large oak, and after its shape formed that famous structure, which has withstood the force of a thousand storms. The triangular stem of the paper-reed, which stands erect amidst the rapid tide of the river Jordan, gave a hint as to the best method of making buttresses to bridges. The self-supporting principle adopted in building the Crystal Palace was suggested to the late Sir Joseph Paxton by observing the form of the royal water lily. These benefits, together with the uses of plants for food, medicine, clothing, shelter, and a number of other important purposes, show us what blessings are stored in this portion of the creation of God for the use of mankind.

Nor let us omit to observe that these objects of beauty and utility may be made to convey some useful lessons to the heart. Nearly 3000 years ago Solomon spoke of trees, "from the cedar that is in Lebanon, even unto the hyssop

that springeth out of the wall;"[1] and in his Proverbs we perceive the use he made of his knowledge.

We shall, in particular, find this study a great help to the right understanding of various passages in the Bible. Many objects in the vegetable world are referred to as emblems of persons, and of spiritual and heavenly things. Our Lord Jesus is called the Rose of Sharon, and the Lily of the Valley.[2] He, too, is the True Vine.[3] The righteous are compared to the green olive tree, and to the flourishing palm tree;[4] while the wicked are likened to thorns and tares.[5] Pious children are as olive plants.[6] The healing of the wounds which sin has made is illustrated by the healing properties of the balsam tree.[7] The blessings which the world will enjoy under the peaceful reign of Christ, are described under the figure of planting in the wilderness the myrtle, the box, and other useful and ornamental trees.[8] The lily among thorns represents the church, or people of God, in their state on earth; the growth of the true Christian by the growth of the cedar in Lebanon;[9] and the frailty of life by the fading of the grass and flower.[10] Thus the contemplation of nature may lead us up to thoughts of nature's God. The objects we witness in our walks will instruct and console us, and give rise to feelings which, if springing from a true faith in Jesus Christ as our Saviour and Redeemer, will be acceptable to the Most High.

1 1 Kings iv. 33.
2 Sol. Song ii. 1.
3 John xv. 1.
4 Psa. lii. 8; xcii. 12.
5 2 Sam. xxiii. 6; Matt. xiii. 25.
6 Psa. cxxviii. 3.
7 Jer. viii. 22.
8 Isa. xli. 19.
9 Psa. xcii. 12.
10 Isa. xl. 7.

II.

The Park.

Come forth, and let us through our hearts receive
The joy of verdure! See! the honey'd lime
Showers cool green light o'er banks where wild flowers weave
Thick tapestry, and woodbine tendrils climb
Up the brown oak from beds of moss and thyme.
The rich deep masses of the sycamore
Hang heavy with the fulness of their prime;
And the white poplar from its foliage hoar
Scatters forth gleams like moonlight, with each gale
That sweeps the boughs: the chesnut flowers are past,
The crowning glories of the hawthorn fail,
But arches of sweet eglantine are cast
From every hedge. Oh! never may we lose,
Dear friend! our fresh delight in simplest Nature's hues!

Hemans.

THE PARK.

PARK TREES: The Oak—Beech—Elm—Birch—Poplar—Willow—Chesnut—Lime—Ash—Hazel—Acacia—Larch—Scotch Fir—Cypress—Yew.

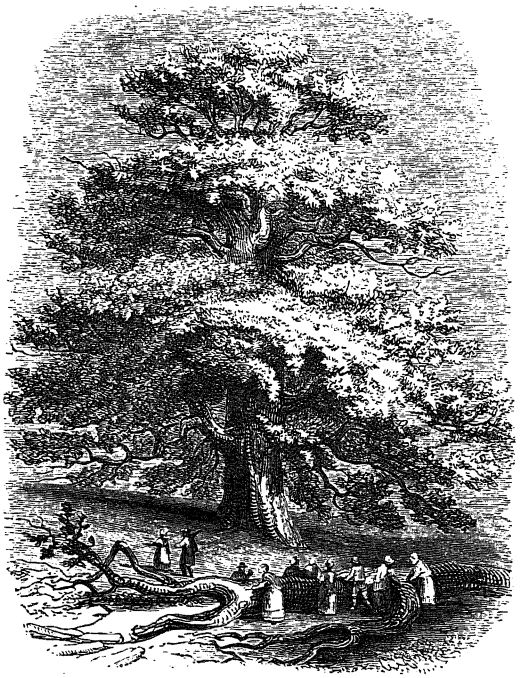
An agreeable journey of a few miles on a railway will conduct us to the park and forest of regal Windsor. If we go forth with observant eyes and inquiring minds, there will be abundant objects to please and instruct us in our excursion.

And now we have arrived, let us seat ourselves on the trunk of this lately-felled tree.

A group of fine old *Oaks* first claim our attention. The trunks are moss-clad, and great gnarled branches spread out like the arms of strong giants. Some have their topmost boughs entirely bare and dead; others, to their greatest height, are full of foliage, which rustles in the gentle wind that blows. At this season of the year the leaves are of a fine dark green tint; and the whole presents a beautiful picture of woodland scenery, which awakens us to praise.

A glorious tree is the old grey oak,
It has stood a thousand years;
It has stood and frown'd
On the woods around
Like a king among his peers.

There are two species of this tree grown in Britain. The first is the common oak,[1] whose acorn stalks are long, and the leaves short; the timber close-grained, solid, and not liable to rot; whilst the other,[2] which has the stalks short,



THE OAK.

and the leaves long, supplies a wood of much looser texture, and very apt to decay. The former is the well-known English oak. Many arts and manufactures are indebted to

1 Quercus pedunculata. 2 Quercus sessiliflora.

this tree. The bark is largely employed in tanning, and is then passed over to the gardener to aid him in procuring heat to his plants for germination. From its timber we build many of our ships, to convey our merchandise over the seas, or to sail forth in pursuit of discovery and science, or to bear to the heathen the missionaries of the Cross. Hence this tree has been called "the father of ships." Before our ships were so largely built of iron, as at present, it is stated that it took 2000 well-grown oaks to build a seventy-four gun ship.

The acorn of the oak was of good service to our forefathers in England, for they not only fed their beasts, but feasted themselves upon it. Hence they called it aec-corn; that is, oak-corn. The oak-apples, or galls, which are gathered by children with delight, are not its natural fruit, but are caused by insects which pierce a hole in the leaves, and lay their eggs therein; this arrests the flow of the sap, which gathers at the spot, and forms a round ball. From these apples a fine black dye is obtained, and which, mixed with certain salts, supplies us with our best ink for writing. The leaves of the oak are said to feed a greater number of insects than any other tree.

In the adjoining forest of Windsor, one of these trees is called "the King's Oak," and is said to have been a favourite tree with William the Conqueror. One thousand years or more have passed since it was a sapling. There are other trees in the same district, which have been celebrated for many generations.

Majestic tree! whose wrinkled form has stood,
Age after age, the patriarch of the wood;
Thou who hast seen a thousand springs unfold
Their ravell'd buds, and dip their flowers in gold.
Gigantic oak, thy hoary head sublime
Erewhile must perish in the wreck of Time:

Should round thy head innocuous lightnings shoot,
And no fierce whirlwind shake thy stedfast root;
Yet shalt thou fall; thy leafy tresses fade,
And those bare scatter'd antlers strew the glade.

The *oldest* oak in England is supposed to be the "Parliament Oak," from the tradition of Edward the First holding a parliament under its branches, on one of the estates of



THE YARDLEY OAK. (*See p.* 19.)

the Duke of Portland. It is considered to be 1500 years old. The *tallest* oak in England was the property of the same nobleman, and was called "the Duke's Walking-stick." It was higher than Westminster Abbey, and stood till a few years since. The *largest* oak is known as "Calthrop Oak,"

Yorkshire ; it measures seventy-eight feet round the trunk near to the ground. While "the Three-shire Oak," at Worksop, is so called from its shade covering part of the counties of York, Nottingham, and Derby.

At Alonville, in Normandy, there is an oak which is more than thirty-five feet round the trunk. For hundreds of years the snows of winter have covered its mighty branches, and it



THE CHAPEL OAK, ALONVILLE.

has been adorned in successive springs with leaves and acorns. There the tree still stands ; but extreme age has destroyed all its interior. It is now only supported by the outlayers and bark, though it is laden with green foliage in the bright months of the year. Within its hollow trunk a chapel has

The oak, though pre-eminently an English tree, is found largely distributed over the earth. In Turkey are many fine specimens of this tribe, whose wood is esteemed for its beautiful grain, and is much used for ornamental work. It grows in a straight and graceful shape, and looks very different from the gnarled and rough bark of the British species. It often affords a delicious shade, under which a whole family will spend the day, and enjoy themselves beneath the wide-spreading boughs. The people of Tyre made the long oars of their ships out of the oaks of Bashan.

The oak has been associated with religious rites, both pure and profane. Abraham, and other holy men of old, before there were regular temples and houses for the worship of God, would probably often offer their prayers and praises beneath this tree; but in after ages the tree itself was held in veneration. The superstitious regard to it passed from eastern nations to the Greeks, and from them to the Druids in Britain; and for ages the early Britons practised their corrupt services beneath its shade. The prophet Isaiah reproves the Jews for their conduct in this respect, and says, "Ye shall be ashamed of the oaks ye have desired."[1] Idols, too, were made out of its wood, and worshipped as gods. "Under every green tree, and under every thick oak," says the prophet Ezekiel, "they did offer their sweet savour to all their idols."[2] These idolatrous groves are often noticed in the history of the Jews; and at length were commanded by God to be cast down.

[1] Isa. i. 29. [2] Ezek. vi. 13.

Among other aged oaks is one at Yardley, Northamptonshire, of which Cowper in his "Letters" writes:—"This tree had been known by the name of 'Judith' for many ages. Perhaps it received that name on being planted by the countess Judith, niece to the Conqueror, whom he gave in marriage to the English earl, Waltheof, with the counties of Northampton and Huntingdon as her dower." The poet also celebrates it in verse:

Thou wast a bauble once, a cup and ball
Which babes might play with, and the thievish jay
Seeking her food, with ease might have purloin'd
The auburn nut that held thee, swallowing down
Thy yet close-folded latitude of boughs
And all thine embryo vastness at a gulp.
But fate thy growth decreed; autumnal rains
Beneath thy parent tree mellowed the soil,
Design'd thy cradle; and a skipping deer,
With pointed hoof, dibbling the glebe, prepared
The soft receptacle in which, secure,
Thy rudiments should sleep the winter through.—
Time made thee what thou wast, king of the woods:
And Time hath made thee what thou art—a cave
For owls to roost in.

Let us now direct our attention to yonder handsome tree, which stands at a short distance along the glade. It is a venerable *Beech*,[1] and is one of our largest woodland trees. Observe what a noble shade it casts around; under it the stately deer love to repose; and its fruit, or "mast," is food for pheasants and other birds. A beech wood, with its diversified hues of fading foliage in autumn, presents a most beautiful appearance. In the olden times these trees were of great importance to the people of our land—so that an early poet has sung:—

[1] Fagus sylvatica.

In the world's best years the humble shed
Was happily and fully furnished:
Beech made their chests, their beds, their join'd stools;
Beech made the board, the platters, and the bowls.

The most ancient tree of this kind now found in England is said to be at Sunninghill, within the bounds of this forest of Windsor. It is supposed to have existed before king Harold lost his crown and life together. There is, also, not far from where we are now seated, a grove of beeches, which was a favourite resort of the poet Pope. On the bark of one of the beeches is deeply cut the words, "Here Pope sang." The timber of the beech is not so valuable as that of the oak; though to the French peasantry it is very serviceable, as of it they make their strong wooden shoes.

The *Elm*[1] is another of our famous British trees. Its lofty and graceful form is seen in the "Long Walk" at Windsor; though sometimes it is much like the oak, rough-looking and crooked, so that at a distance it may be mistaken for one; but when in full foliage its character is better marked. It formerly bore the Saxon name of "ulm," which signifies a shade. A cool sheltered spot is referred to by one of our poets as—

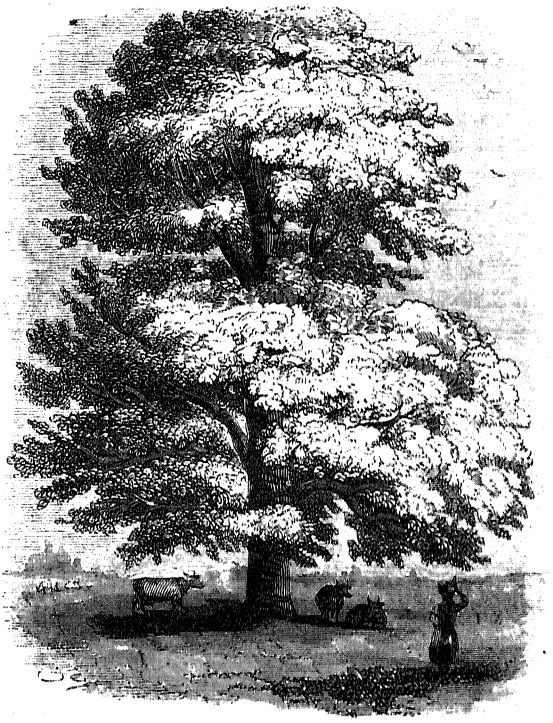
Where branching elms exclude the mid-day heat.

The elm is the first of our park trees to show its bright and cheerful green leaves in the spring, and the last to shed its foliage at the approach of winter. In ancient husbandry the elm was generally employed to sustain one or two vines, which clustered round its straight stem, to which allusion is often made by classic writers:—

As a vine
With subtle wreath and close embrace doth twine

[1] Ulmus campestris.

It is much used in shipbuilding, and for other purposes, as



THE ELM.

pumps and watermills, where there is required a strong wood that will not easily split or crack. There are some

fine old elm trees in England. At Crawley, in Sussex, is one whose hollow trunk is formed into a small room about twelve feet wide. At certain times the parish officers dine within its curious chamber. We commonly see on china plates and tea services representations of strange-looking dwarfish trees; these are intended for the elm. The Chinese distort the trunk of the young tree, by tying wires around it, and fixing them to stakes in the ground, so that the stem of the tree shall grow into strange and fantastic shapes.

There is a different order of tree before us. It is the *Birch*,[1]— a tree that in some places reaches to more than sixty feet in height, and in others is not larger than a bush. It will thrive in lands dry and wet, sandy and stony, marshy and boggy; and is found alike on the low, bleak, shores of Iceland, and the lofty, sunburnt sides of Mount Etna in Sicily. To the poor Laplander this tree is of the greatest value. With part of its bark he covers his hut, and from another part he extracts an oil for his winter lamp: he makes a refreshing drink from its sap; and its timber supplies him with a canoe. There is, indeed, a species called the *Paper* or *Canoe Birch*,[2] which has a bark that may be made into paper or fashioned into a canoe. In Canada this sort of boat is so light as to be borne on the shoulder; but when in the water it will carry a considerable burden. The foliage of the birch has been much admired; and the tree is called by the poet Coleridge, "The lady of the woods."

The *White Poplar*[3] is a well-known tree. There are three other kinds, natives of England—the grey, the black, and the aspen, or trembling poplar. The latter is so called

1 Betula alba. 2 Betula papyracea. 3 Populus alba.

poplar, with their white downy underside, which, ruffled by the wind, gives to the tree a pretty silvery appearance?

The *Black Poplar*, a large and handsome tree, is a native of Turkey.

Poplars are common in Syria, more particularly about Damascus, where they are planted in groves and walks, forming a cool shelter in the great heat of summer. A gum flows from the bark, which is used in medicine; the dry leaves are eaten by sheep when there is a scarcity of other food.

In ancient Greece, the poplar was regarded as a sacred tree; and the spots where it grew in Israel were chosen by the people when they fell into idolatry for their profane worship.[1]

Here is another tree claiming our notice—the *Weeping-Willow*,[2] so pleasing an addition to a park, beside a sheet of water. It is said that the poet Pope planted the first tree of this species in England. Having received a present of figs from Turkey, he observed a twig of the basket in which they were packed putting forth a bud: this he planted in his garden at Twickenham, and in the course of a few years it became a fine tree, from which all the beautiful weeping willows in our own country have sprung. The tree which Pope planted has withered, but its offshoots are found bending over many an English stream. Let us learn to do some good as we pass through life: it may blossom and grow in other places when we have long gone hence. Sow

[1] Hosea iv. 13.

[2] Salix Babylonica.

a useful thought, plant an acorn of truth, engraft a kindly feeling in the heart of another, and it may flourish and bear fruit for ages to come.

A poetess, Miss Landon, thus expresses her sentiments on beholding a willow shaken by a storm:

> Green willow! o'er whom the perilous blast
> Is sweeping roughly, thou dost seem to me
> The patient image of humility,
> Waiting in meekness till the storm be pass'd;
> Assured the hour of peace will come at last:—
> That there will be for thee a calm bright day,
> When the dark clouds are gather'd far away;
> How canst thou ever sorrow's emblem be?
> Rather I deem thy slight and fragile form,
> In mild endurance bending gracefully,
> Is like the wounded heart, which, 'mid the storm,
> Looks for the promised time which is to be
> In pious confidence. Oh! thou should'st wave
> Thy branches o'er the lonely martyr's grave.

There are several Bible references to the willow. Isaiah speaks of the "brook of the willows,"[1] and of "willows by the watercourses." The green boughs were used at the feast of tabernacles. The weeping-willow is supposed to be that meant in the plaintive song of the Jewish captives at Babylon. "By the rivers of Babylon there we sat down: we hanged our harps upon the willows in the midst thereof."[2] A passage which has been tenderly paraphrased by a Christian poet—

> By Babylon's proud stream we sate,
> And tears gushed quick from every eye,
> When our own Zion's fallen state
> Came rushing on our memory;
> And there the willow groves among,
> Sorrowing, our silent harps we hung.

[1] Isa. xv. 7; xliv. 4.

[2] Psa. cxxxvii. 1, 2.

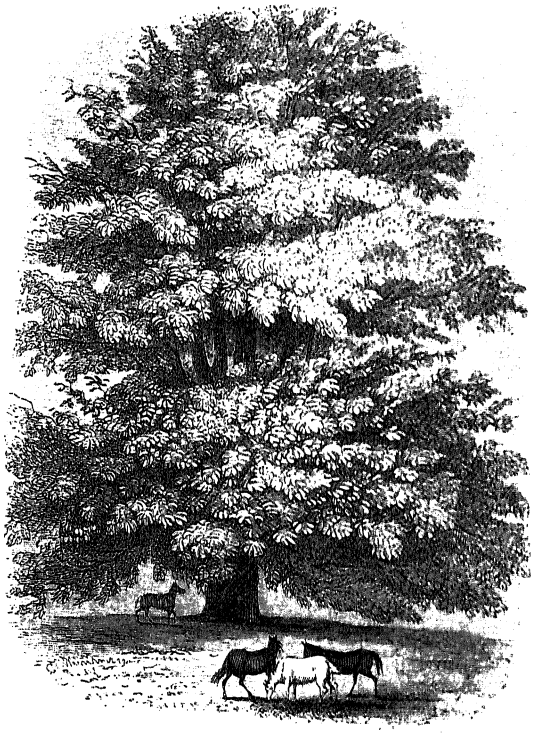
Let this unworthy hand decay;
When Salem is remembered not,
Mute be these guilty lips for aye!
Yea, if in transports livelier thrill,
Thou, Zion, art not dearer still!

An avenue of *Chesnut*[1] trees gives a fine ornamental appearance to a park, especially in their blossoming seasons, with their pyramids of large white flowers; but the sight is excelled in South America, where thousands of these trees stand in groups, adorned with blossoms of a brilliant scarlet colour. The *Horse Chesnut* was brought to us from the northern part of Asia about six hundred years ago. On our lawns it is ever a great favourite. Beneath its shade deer love to shelter from the rays of the sun, and to feast upon the fallen fruit. Some of these trees grow to a great size: one has been described in whose hollow trunk a whole flock of sheep was folded; and another, in which was formed "a pretty wainscoted-room, enlightened with windows, and furnished with seats." One on Mount Etna, known as "the chesnut of a hundred horses," is the largest tree in Europe. The wood is in great demand by coopers. In some parts of the world the nuts are ground, and given to horses—hence its name.

The *Spanish*, or *Sweet Chesnut*,[2] is not of the same tribe,

1 Æsculus hippocastanum.
2 Castanea vesca.

being nearly allied to the beech. It has been long cultivated in England. There is a tree of this kind at Tortworth, in Gloucestershire, which was in its prime in the reign of king Stephen in 1135, and is calculated to



THE HORSE CHESNUT.

have been a sapling in the time of Egbert, about the year 800. The fruit of the sweet chesnut is much used by the poor in some lands to make bread.

and is in much demand by turners and carvers on account of its close texture and easy working. It grows to a great size, and lives for eight or ten centuries. The walks in St. James's Park, London, are shaded by rows of lime trees.

The *Ash*[2] is a handsome tree. In the British Isles it ranks next to the oak for its value and usefulness. But, like many other beautiful things of earth, it soon loses its loveliness. Its notched and sharp-pointed leaves fall early, and its boughs are desolate before many other trees begin to shed their foliage. Evelyn, the writer on "Forest Trees," says that "it serves the carpenter, wheelwright, cartwright, cooper, turner, and thatcher. Nothing like it for garden-palings, hedges, hop-poles, and spars. The husbandman cannot be without it for his carts, ladders, and other tackling: it is the sweetest wood of the forest for fuelling, and even of its rotten parts a useful powder is made."

This tree loves to wave its graceful form on the sides of craggy precipices, or to root itself in the fissures of a rocky bank, bending over some rocky streamlet. It is thus described by Southey:

> Amid the brook,
> Grey as the stone to which it clung, half root,
> Half trunk, the young ash rises from the rock:
> And there its parent lifts its lofty head,
> And spreads its graceful boughs: the passing wind
> With twinkling motion lifts the silent leaves,
> And shakes its rattling tufts.

1 Tilia Europæa. 2 Fraxinus excelsior.

The leaves of the young ash are frequently given to cattle when grass is scarce. The bark is used in dyeing, as well as in tanning of calves' skin. The fruit of the ash



THE ASH.

grows in bunches, which young people call "locks and keys."

In the days of Isaiah ash, it is said, was used for making idols;[1] though possibly another sort of tree is meant.

[1] Isa. xliv. 14.

but sin.

There is a tree of this tribe, the *Manna Ash*,[1] which is chiefly found in Italy. Its sap is obtained by wounding the tree, when it flows forth like water, but which gradually congeals, and hardens in the sun: it is then of great value as a medicine, and is known at chemists' shops as "manna." It is, however, only to be obtained from the tree in rainy seasons, and at one particular time of the year. This substance is not to be confounded with the manna which fed the Israelites for forty years in the wilderness, and which was supplied by the miraculous power of God.

We are now passing a cluster of *Hazel* trees.[2] Where is there a young person to be found who does not love the hazel, and does not delight to roam among and pull down its loaded boughs.

> The clustering hazel;—ah, as with a spell,
> Those few brief words recall the bygone hours,
> When the heart's pulse was music, and on flowers,
> Bright, thornless flowers, my footsteps ever fell.
> Even now, methinks, I see the bushy dell,
> The tangled brake, green lane, or sunny glade,
> Where, on a sunshine holiday, I stray'd,
> Plucking the ripening nuts with eager glee,
> Which from the hazel boughs hung temptingly.

The hazel has a cheerful appearance when its flowers, or catkins, hang romantically from its branches, but is still more enticing when the brown-shelled nuts hang clustering on its sprays. The hazel is very plentiful in England, both

1 Fraxinus ornus. 2 Corylus avellana.



in the hedges and the woods. When cut early, it is formed into hurdles, stakes, and fishing-rods; but if left to grow it shoots up into poles often twenty feet high. The squirrel



THE HAZEL—NUTTING.

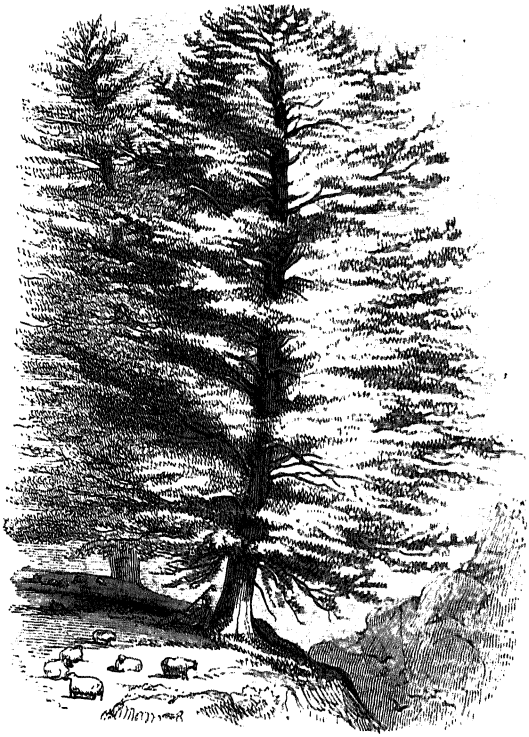
climbs its boughs and feasts himself on the fruit; while the mouse, and many other small animals, feed on it when it falls to the ground.

And now we can see through the opening of these hazels a cluster of elegant *Acacias*[1]—a family of trees which deserve notice for the fine quality of its wood, and the prettiness of its small leaves and racimes of flowers. It is called the *Locust Tree* in America; and was one of the first trees brought from that continent to Europe. In its original home it grows to the height of seventy or eighty feet. Its value as timber is stated by Gilpin, a writer on trees, to be very great. He relates a story of a farmer on Long Island, North America, who planted a field of fourteen acres with suckers of acacias in the first year of his marriage. At the end of twenty-two years he cut about three hundred pounds' worth of timber out of his acacia wood, and gave it to his eldest son to start him in life. Three years afterwards he did as much for a daughter; and thus he provided for his family, the wood in the meantime making up by its growth for all the losses that had occurred. The acacia is believed to be the *Shittah* tree of the holy Scriptures, of which the ark of the Lord was made. One of this species, known as the *Acacia arabica*, yields a gum which is largely used in the east for food. The poor people in Hindostan have what they call their gum-harvest, when they gather the gum in great abundance.

The *Larch*[2] now rises erect before us; it is one of the fir and pine tribe. Its timber is tough and elastic. A violent storm which once raged in a pine and larch forest tore up and broke hundreds of the former trees, while the latter, by bending to the gale, remained uninjured. The timber is very durable, and of so bitter a taste that no insect will either take up its abode in it or eat it. Many early painters

1 Robinia pseudo-acacia. 2 Pinus Europæa.

hence chose this wood for their best works of art: had they been executed on other kinds of wood they would



THE LARCH.

have perished long ago. The resin which is got from the larch tribe is known as Venice turpentine.

Of the same tribe as the larch is the *Scotch Fir*.[1] In the Scripture we often read of the fir tree; thus the Psalmist

[1] Pinus sylvestris.

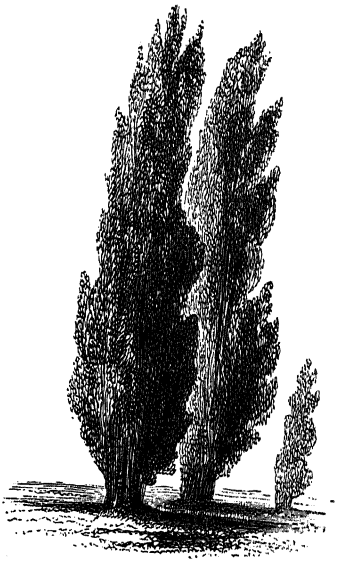


THE SCOTCH FIR.

found in Britain is the Scotch fir. When planted in a grove the trunk becomes tall and naked; but it puts forth numerous branches in open, sunny places. It is said to live sometimes to the age of four hundred years. The

splinters, to burn instead of candles, as they contain a great quantity of resin, and easily take fire.

The wood of the fir trees of the east was anciently used for spears,[1] and musical instruments, for David played "on all manner of instruments made of fir wood."[2] Solomon covered the floor of the temple with "planks of fir;" and one part of the sacred courts he "ceiled with fir overlaid with gold." Ships also were built of this wood.[3] At the present day it is much used in the manufacture of harps, guitars, and violins.



THE CYPRESS.

Another of this tribe should not be unnoticed —the *Cypress*.[4] It is an evergreen — tall and hardy, that shrinks not beneath the heat of summer nor the cold winds of winter. The wood is very heavy and handsome, and is used in the manufacture of fancy furniture. The leaves have a dark

1 Nahum ii. 3.
2 2 Sam. vi. 5.
3 Ezek. xxvii. 5.
4 Cupressus sempervirens.

and melancholy look, and in the east it is commonly planted in graveyards. Cypresses have been known a thousand years old; and from the durability of the wood it has been used in building the doorways of St. Peter's cathedral at Rome, and the temples of other lands, and also for making the coffins of the rich in Greece. Mummies, or the bodies of those who died many hundreds of years ago in Egypt, are found in cases made of this tree. The "gopher wood" of which Noah built the ark is supposed to have been the cypress.

Now notice yonder *Yew*,[1] which is likewise one of the fir tribe.

> Full well I love thee, melancholy yew,
> Whose still green leaves in solemn silence wave,
> Above the peasant's unhonour'd grave,
> Which oft thou moisteneth with the morning dew.

Its English name comes from a word meaning "verdure," because it was one of the few evergreens formerly known in Britain. The trunk of the yew is mostly straight; the leaves are narrow, and closely arranged in a double row on the branches. The wood is finely-grained, hard, and is employed for many purposes. Its berries are red and wax-like. The young should be careful not to eat these berries, as, though not unpleasant to the taste, they are dangerous to health.

Yew trees were once much cultivated in England: there was formerly scarcely a country churchyard which did not contain its yew. In the times when bows and arrows were used in warfare and the chase, its boughs were in constant demand. It is a common saying in the New Forest, that "a post of yew will outlast a post of iron;" but it is chiefly

[1] Taxus baccata.



THE YEW.

and Wales its branches, until lately, were carried in funeral processions, and then cast into the grave. Indeed, the mournful procession often passed through the decayed

trunk of an old tree, as in the case of the Fortingal yew in Scotland.

The funeral yew! the funeral yew!
How many a fond and tearful eye
Hath hither turned its pensive view,
And through its dark leaf sought the sky.



THE FORTINGAL YEW.

The sun is now sinking in the western sky, and it is time for us to turn homewards from our pleasant ramble in the Park. As we return, that type of immortality which we have last beheld, may suggest to us the welcome thought that we do not sorrow when we bury our pious dead "as those who have no hope; for if we believe that Jesus died and rose again, even so them also which sleep in Jesus will

whosoever believeth in Him shall have everlasting life.

[1] 1 Thess. iv. 13, 14.

[2] 2 Tim. i. 10.



III.

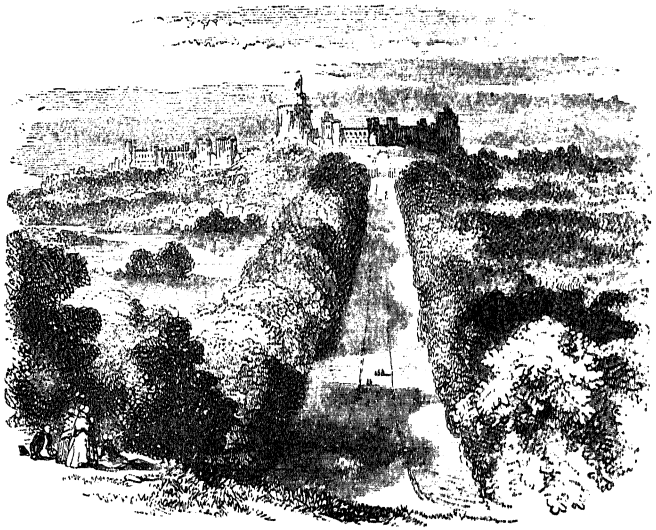
The Forest.

Tall and venerable trees
Outstretch their massive arms, and form green bowers
Of shadowy solitude. From lofty boughs,
As from a roof, the clambering woodbine hangs,
With honeysuckle mix'd, and sweet-briar wild;
All richly mingling in this cool recess
Of forest loneliness. *Dodds.*

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THE LONG WALK, WINDSOR FOREST.

THE FOREST.

White Pine—Stone Pine—Chili Pine—Great Magnolia—Sugar Maple—Candleberry—Mexican Cypress—Caoutchouc—Locust Tree—Logwood—Peruvian Bark—Cow Tree—Mahogany—Stringy Bark or Gum—Moreton Bay Fig—Grass Tree—Nettle Tree—Bunya-bunya—Wattle—Mammoth Tree—Banian—Mangrove—Deodar—Indian Cedar—Pippul—Gutta-percha—Varnish—Kou-chou—Bamboo—Gamboge—Camphor—Tallow Tree—Torch Tree—Baobab—Cork—Cedar.

OUR pleasant visit to the Parks at Windsor may tempt us to explore the glades and recesses of the adjoining royal Forest. It is "a vast domain, fittingly belonging to an abode of England's sovereign," and is said to have been chiefly planted by William the Conqueror, who had a

hunting-seat here. In some parts the grazing deer are seen under the woodland slopes; in others there are thickets through which the sun's rays can scarcely penetrate; deep dells where the deer browse undisturbed by man; and solitudes where the only sound is that singular buzz which is familiar to every lover of forest scenery.

The same orders of trees meet our view as we have contemplated in the neighbouring parks. Oaks, elms, limes, chesnuts, birch, and beech, here mingle in wild luxuriance and beauty.

> Sweet is the scene, with richest foliage crown'd,
> Gay lights and shadows twinkle on the ground;
> Up the tall stems the gayest creepers run,
> To hang their silver blossoms in the sun;
> Deep velvet verdure clothes the turf beneath,
> Where trodden flowers their richest odours breathe,
> Whilst insect myriads, in the solar gleams,
> Glance to and fro like intermingling beams.
> So fresh, so pure, the woods, the sky, the air,
> It seems a place where angels might repair,
> And tune their harps beneath these tranquil shades,
> To morning songs or moonlight serenades.

But if a ramble through these woodlands awakens astonishment and delight, how much greater would be our emotions were we to penetrate one of the forests in a distant land, where we might travel from early morn to the darkness of night, day by day, without finding ourselves safely through the vast ranks of trees! It is asserted that there are pine forests in America which extend five hundred miles in length, with only here and there a few huts to shelter the woodcutters during the season of felling the timber. Imagine tens of thousands of pines, with their branches spreading on either side, and gracefully drooping like ostrich plumes. We may well, then, believe, what has been asserted, that

there are more pines on the earth than any other kind of trees. In climates cold and warm, upon high mountains, among rocky cliffs, and sandy plains, the pine flourishes in all its vigour.

> Where summer ever smiles, with verdure crown'd,
> Where winter flings his storms, the pine is found;
> With lofty head erect it stately grows
> 'Mid burning sands or everlasting snows.

The pine tribe is of the greatest service to man, especially the *White Pine*.[1] It gives to us the timber commonly called *Deal*, which, from its soft yet firm texture, as also from the ease with which it can be worked, is much used in house-building. More than one million of cartloads of this timber are brought to England every year from different parts of the world. Some of these trees furnish us with masts for our ships; others supply us with the fluid called turpentine, which, when boiled, becomes resin. By burning the roots and coarser parts of the trunk, tar is made, and by boiling the tar we get pitch.

One kind of pine yields spruce, used in making spruce-beer; another, a healing balsam; a third, pounce, with which we sometimes strew our manuscripts; a fourth, bark for tanning; the coating of a fifth is made into bread by the Norwegians; and another, the *Stone Pine*,[2] has a kernel, which is a favourite fruit of modern Italians, as it was with their forefathers, the ancient Romans. The squirrels also share in the spoil, by striking the pine-cone against a stone or rock, and getting at the kernel.

One of the most beautiful specimens of this tribe is the *Chili Pine*.[3] Observe its long, slender, snake-like branches, closely covered with thick leaves, ranging one above another,

1 Pinus alba. 2 Pinus pinea. 3 Araucaria imbricata.

are said to be never without a supply of the fruit.

The upright and majestic form of the pine is employed by the prophet Isaiah as an emblem of the flourishing state of the Church.[1] The Jews, when in Canaan, used the branches of the pine to make booths, in which they dwelt for a short time, in memory of their fathers having resided in such rude dwellings in the wilderness.

As the sight of a pine has translated us in thought to the North American continent, we may direct our notice to another forest tree of the same part of the world, the *Great-flowered Magnolia*,[2] with its laurel-like evergreen leaves and its splendid petals. The tree shoots up to the height of more than one hundred feet. Its trunk, perfectly straight, is surmounted with a thick and expanded head of green foliage. From the centre of this luxuriant crown a flower of pure white arises, having the form of a rose, and to which succeeds a crimson cone. This, in opening, exhibits round seeds of the finest coral red, suspended by delicate threads six inches long. These are the largest flowers that are known to grow on any tree. When a tree is in full blossom it looks at a distance like a gigantic nosegay.

But if the magnolia claims attention for its beauty, the *Sugar Maple*[3] of North America is to be valued for its utility. It yields a large amount of sugar. The trees are tapped

[1] Isa. xli. 19; lx. 13.

[2] Magnolia grandiflora.

[3] Acer saccharinum.

with a borer in the spring of the year, and sap flows out, varying from a pint to a gallon in one day. The sap continues to flow for more than a month, and the tree is not injured by the operation, but is said even to be improved by it. The small twigs are tender and full of sweetness, and make an agreeable provender for cattle. The maple tree belongs to the sycamore tribe, one or two species of which have been naturalized in England. The remains of a venerable tree of this kind is to be seen in the Inner Temple Gardens, London, surrounded, as it has been for ages, by houses.

Another curious North American tree is the *Candleberry* or *Wax Myrtle*.[1] Towards winter, when its blue berries are ripe, a man with his family visits the spot where the tree grows, taking with them kettles in which to boil the berries. He builds a hut as a shelter during their stay of four or five weeks. He cuts down the trees, the children strip off the berries, and throw them into the vessels; and, on their being boiled, oil rises to the surface, which, when cold, hardens to the consistence of wax. It is afterwards purified in other vessels; and candles made of it burn a long time with peculiar brightness, and yield a grateful odour.

The *Mexican Cypress*[2]—found in the same latitudes as the preceding—is of the same family as the yew. When fully grown the stem is straight, tapering, and spirally twisted like a corkscrew. It is ninety feet round its base, and is stated by Professor Henslow to live to the wonderful age of four thousand years. The great traveller Baron Humboldt describes a tree of this species which measures 118 feet round; and it is related that a greater part of the Spanish army under Cortes once reclined under its shadow.

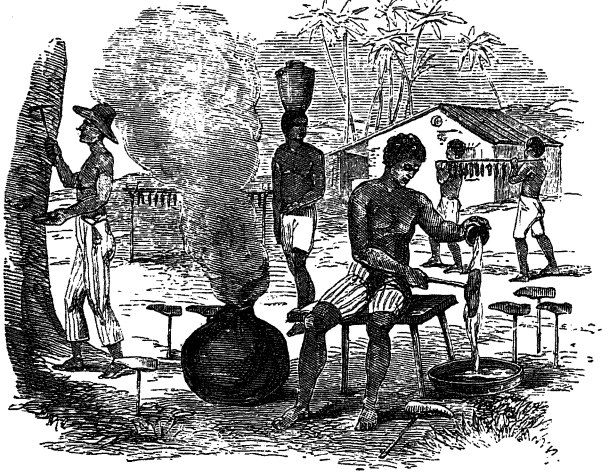
[1] Myrica cerifera. [2] Taxodium distichum.

Let us now, in imagination, transport ourselves to a South American forest, some of whose trees are among the greatest curiosities of the vegetable world. And first, there is the *Caoutchouc*, or *India-rubber tree*,[1] which is found near the banks of the Amazon. It reaches to the height of from eighty to a hundred feet. The leaves grow in clusters of three, and the fruit is the size of a peach, which, although not palatable to man, is eagerly sought after by some animals. On wounding or tapping the trunk a yellowish liquid, resembling cream, flows out, which is caught in small clay cups, fastened to the tree. The contents are then emptied into large earthen jars, in which the liquid congeals, and is kept until wanted for use. Sometimes a tree is cut from the bottom to the top, at about a foot apart; and from all these wounds the milk will flow. It will bear this operation once a fortnight. How great a proof of the strength and vitality of vegetable life!

One use of caoutchouc is to remove the marks of lead pencil from paper. But "the elasticity of caoutchouc is its most remarkable property; pieces of it may be stretched, after being soaked in warm water, to seven or eight times their original length without being torn, or having their contractile power destroyed; and bottles of it may, by means of a condensing syringe, be expanded to many times their original dimensions. If a bottle be soaked in well-washed sulphuric ether until quite soft, it may be inflated by means of the mouth until it has become so thin as to be transparent, and sufficiently light to ascend when filled with hydrogen gas. If dried in this state it will not again contract, and thin sheets of caoutchouc may thus be formed. A bottle has in this way been expanded until it was six feet in diameter."[2]

[1] Ficus elastica.

[2] "Curiosities of the Vegetable Kingdom."



smoked, to make it dark, and dry the gum. In one town of Brazil more than three hundred thousand pairs of shoes are made every year, the larger portion of which are sent to England. Even portable boats, capable of holding fifty men, have been made of india-rubber.

In a South American forest one of the longest-lived of plants is the *Great Locust tree*, which, from the infancy of the sapling to the decay of age, ranges from 2000 to 4000 years. "In one place where these prodigious trees were found," says a learned traveller,[1] "it appeared to me as if it

[1] Von Martius.

were the portals of a magnificent temple, not constructed by the hands of man, but by God himself, as if to awe the mind of the spectator with a holy dread of his own presence. Never before had I beheld such enormous trunks, they looked more like living rocks than trees; for it was only on the pinnacle of their bare and naked bark that foliage could be discovered, and that at such a distance from the eye that the forms of the leaves could not be made out. Fifteen Indians with outstretched arms could only just embrace one of them." (*See Frontispiece.*)

There are several varieties of the *Locust tree*[1] on the American continent. One kind is of remarkable quickness of growth, and in its maturity is of great value as timber. A story is told of a farmer who planted in the first year of his marriage the space of fourteen acres with suckers of this variety. At the end of twenty-two years he cut about three hundred pounds' worth of timber out of this plantation, and gave it to his eldest son to start him in life. Three years afterwards he did as much for a daughter; and thus he provided for his family, the wood continually making up by its growth for all the losses that had occurred.

Two other useful trees are natives of the same region — the *Logwood*,[2] which is much used in the art of dyeing, and in the manufacture of ink; and the *Peruvian Bark*,[3] which yields a valuable medicine. It is said that the Peruvians learned the use of the bark by observing that a man suffering from ague was cured by having drunk of a pool in which some felled trees had long lain.

High up on the mountains of this part of the new conti-

[1] Robinia pseudo-acacia. [2] Hæmatoxylon campechianum.
[3] Cinchona cordifolia.

nent also grows the *Cow tree*.[1] Baron Humboldt gives the following description of it:—

"On the barren flank of a rock grows a tree with dry and leathery leaves; its large woody roots can scarcely penetrate into the stony soil. For several months in the year, not a single shower moistens its foliage. Its branches appear dried and dead; yet, as soon as the trunk is pierced, there flows from it a sweet and nourishing milk. It is at sunrise that this vegetable fountain is most abundant. The natives are then seen hastening from all quarters, furnished with large bowls to receive the milk, which grows yellow, and thickens at the surface. Some drain their bowls under the tree, while others carry home the juice to their children; and you might fancy, as the father returned home with the milk, you saw the family of a shepherd gathering around, and receiving from him the production of his kine. The milk obtained by incision made in the trunk is tolerably thick, free from all acidity, of an agreeable and balmy smell. It was offered to us in the shell of a calabash tree. We drank a considerable quantity of it in the evening, before we went to bed, and very early in the morning, without experiencing the slightest injurious effect."

Before we leave the South American forest let us look at a picturesque sketch drawn by a traveller.[2] "Beyond the bridge is a primeval forest. Trees of incredible girth tower aloft, and from their tops one in vain endeavours to bring down the desired bird with a fowling-piece. The trunks are of every variety of form; round, angular, and sometimes resembling an open network, through which the light passes in any direction. Amid these giants, very few low trees or little underbrush interfere with one's movements, and very rarely is the path

1 Galactodendron utile. 2 Edwards's "Voyage up the Amazon."

root, they in their turn throw out arms that cling to the first support. In this way the whole forest is linked together, and a cut tree rarely falls without involving the destruction of many others. This creeping vine is called *sepaw*, and having the strength and flexibility of rope, is of inestimable value in the construction of houses, and for various other purposes. Around the tree trunks clasp those curious anomalies, parasitic plants, sometimes throwing down long slender roots to the ground, but generally deriving sustenance only from the tree itself, and from the air, called hence, appropriately enough, 'air plants.' These are in vast numbers, and of every form, now resembling lilies, now grapes or other familiar plants. Often a dozen varieties cluster upon a single tree. Towards the close of a rainy season they are in blossom; and their exquisite appearance, as they encircle the mossy and leaved trunk, with flowers of every hue, can scarcely be imagined. The trees in this scene of beauty are of diversified kinds and forms. Nor is this wild luxuriance unseen or unenlivened. Monkeys frolic, squirrels scamper, the exquisite tiny deer, scarcely larger than a lamb, bound fearlessly along, and birds of gayest plumage flit through the trees. The whole scene fills the spectator with wonder and delight."

Before we leave, in our imaginary tour, the continent of America, let us look at a most valuable tree—the *Mahogany*.[1] In the rich valleys of Cuba, and in those that open on the

[1] Swietenia mahogoni.

Bay of Honduras, this majestic tree throws out its massive arms, adorned with shining green leaves and pearly-looking flowers, presenting at once the appearance of elegance and strength. The beauty and hardness of the wood have led to its adoption in the manufacture of the most costly articles



THE MAHOGANY TREE.

of furniture. It is said that worms or insects will scarcely touch it, and water will not rot it. The first discovery of the use to which mahogany might be turned is due to Dr. Gibbons, an eminent physician, who lived nearly two

wood too hard for their tools, the logs were [illegible] useless. Soon after, Mrs. Gibbons wanting a candle-box, the doctor called on his cabinet-maker to make one of some wood that lay in his garden. The cabinet-maker also complained that it was too difficult to be cut with his tools, when he was told he must get stronger ones. The candle-box was however made, and highly approved of, insomuch that the doctor then insisted on having a bureau made of the same wood, which was accordingly done, when the rich colour, handsome grain, and fine polish, were so striking, that it became an object of curiosity, and he invited his friends to come and see it. Among them was the Duchess of Buckingham, who begged a portion of the wood, and employed the same cabinet-maker to make her a bureau also, on which the fame of mahogany was much raised, and furniture of this kind soon became the fashion. A single log of mahogany imported at Liverpool weighed seven tons, and was sold at £525.[1] And it has been stated that Mr. Broadwood, the pianoforte maker, gave the large sum of £3000 for three fine logs of mahogany, which were the produce of one tree.

We now pass from the vegetable productions of America to those of Australia.

The first thing that would strike us in an Australian woodland scene would be the fact that the leaves of the trees present their edges to the light; they grow, as we say, vertically, instead of in an horizontal direction. They

[1] "Library of Entertaining Knowledge," Timber, p. 147.

therefore afford but little protection from the scorching rays of the sun. If this is a disadvantage to the traveller, needing a shadow in the day time from the heat, it is a gain to the emigrant, who can grow grass where it otherwise would not thrive. Though the trees are at all seasons covered with leaves, we must not call them "ever-green," but "never-green," or "ever-brown;" for the foliage is chiefly of brownish and leaden colours. The leaves, too, are without gloss, and do not give to the scene that cheerful air as our forests present. But what is lost in beauty is made up in bulk and stature.

Of the numerous trees found in Australia, we begin with the *Gum tree*,[1] or, as it is called in some parts, the *Stringy Bark*. It is not uncommon to see a tree, of vast bulk, rising more than a hundred feet without sending out a branch. One of these giant trees would be more than sufficient to build a house for the abode of a good-sized family. A grove of these trees resembles a temple with tiers of elegant columns. Mr. Backhouse, when on a visit to Van Diemen's Land, says of the stringy bark, "My companions spoke to one another, and called to me when on the opposite side of the tree, and their voices sounded so distant that I concluded they had quitted me in search of some other object. I accordingly called to them, and they in answer remarked the distant sound of my voice, and inquired if I possibly were behind the tree." This gentleman found one of these trees lying on the ground which measured 213 feet long: he and his friends went up one of its huge branches as up an inclined plane, and walked four abreast with ease upon its trunk.[2]

1 Eucalyptus caryophyllata.
2 Backhouse's "Visit to the Australian Colonies."

Another specimen was met with, which was called by the native travellers "the big tree." Its inside had been burnt out by fire, and yet it flourished. An entrance on one side was as wide as a large church door. Two full-grown horses with their riders could enter abreast, and ample accommodation was found within for several men and their horses.

Another tree in an Australian forest is the *Moreton Bay Fig*,[1] which has leaves each a foot long, and four inches broad, of an oval shape. Some of these trees are the largest known in the world. They throw out, as supports to their great bulk, buttresses of wood all round the trunk; and including these projections a tree often measures three hundred feet round, and inside the buttresses there would be space for the stalls of eighty to a hundred horses. The figs furnish a grateful food to various tribes of birds and the wild natives of the land.

Another striking object in the same landscape is the *Grass tree*.[2] The trunk is a long stalk, like an enormous bulrush, whose top is adorned with a vast cluster of grass-like foliage, bearing some resemblance, when viewed from a distance, to the palm tree. Of its shaft the natives make their spears, its pith is an article of food, and the yellow wax it yields is of various use.

In the same region is found the *Nettle tree*,[3] a sort of monster stinging nettle, growing to the height of forty feet, with a stem nine feet round. It has been called one of the "serpents of the vegetable kingdom." The slightest touch will produce the severest pain, while a more severe one will paralyse the part affected for hours. Even the rough hides

[1] Ficus macrophyllus. [2] Xanthorrhæa hastilis. [3] Urtica gigantea.

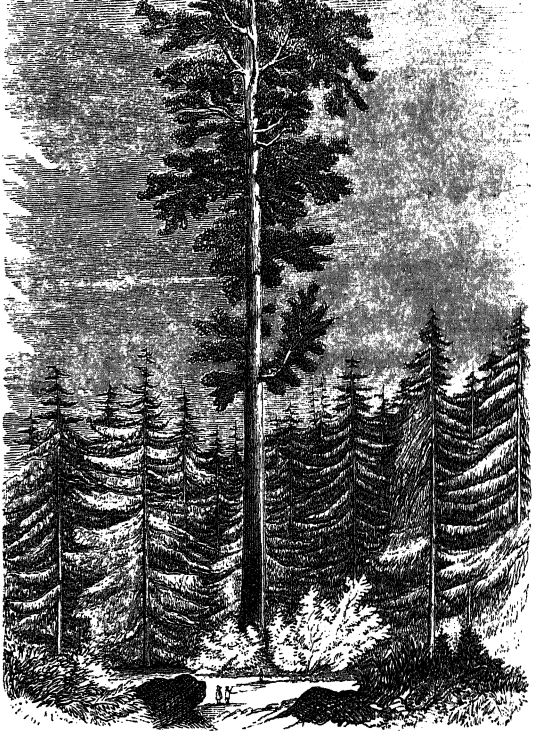
of horses will rise in large blisters if they rub against the tree, and the poor creatures show very strikingly their great agony of pain.

Among other objects of Australian woodlands are the *Bunya-bunya*[1] and the *Wattle tree*.[2] The former is a sort of pine, and looks like a great umbrella, upon a stick nearly two hundred feet high. Once in four years it bears a cone as large as a man's hand, in which are from fifty to eighty nuts. The harvest of these nuts lasts for several months, when the natives assemble, frequently coming a distance of two hundred miles, to the great "bunya-bunya feast;" during which they grow fat and sleek. The wattle is adorned by myriads of yellow-tufted flowers and bean-like pods.

But if the trees of giant size of Australia fill the mind with awe, the *Mammoth trees*[3] of California are yet more wonderful. There is a small forest of these marvellous objects on the side of a mountain. One of them is four hundred and fifty feet in height, and the trunk, were it hollow, would contain more than two hundred men. What a strange sight, were a school of a hundred boys, a hundred girls, and a dozen teachers, all to take refuge from a storm, at the same time, in such a tree! Notwithstanding its enormous size, it is very elegant and beautiful. Its bark is fourteen inches thick.

To a group of these trees the name of "the three sisters" has been given. A single tree standing by itself is called "the old bachelor." And another is "the old maid." One is known as "the hermit;" and two others are "the mother and her son." The mother stands three hundred and twenty-

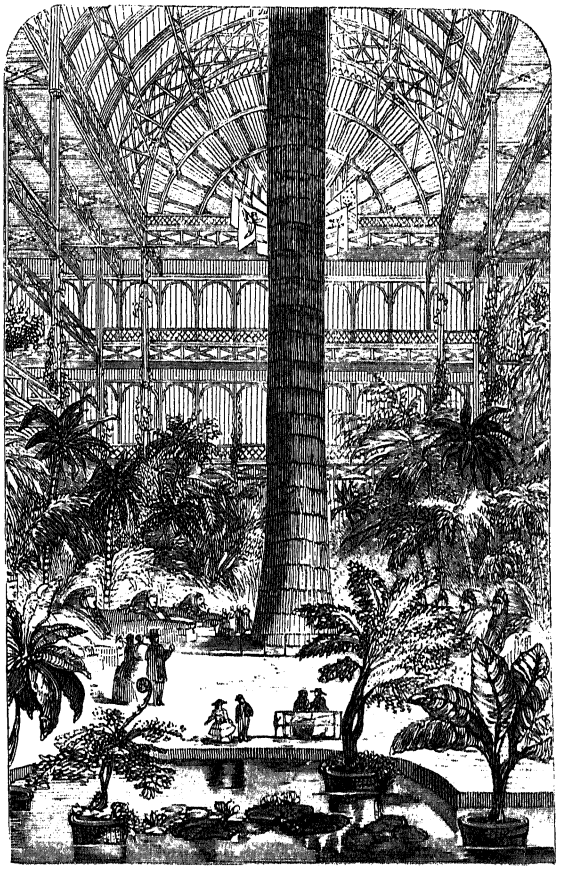
1 Auracari Bidwilli. 2 Acacia— 3 Wellingtonia gigantea.



THE MOTHER OF THE FOREST—AT HOME.

twins," "the two friends," "the bride of the forest," "the beauty of the grove," besides others with fanciful names,

which have been given to these mighty trees by the early settlers of the land.



THE MOTHER OF THE FOREST—AT SYDENHAM.

The tree of which we present two pictures is called "*The mother of the forest.*" The first engraving shows the tree as

it was first seen. To the great height of one hundred and forty feet it rises without throwing out from its trunk a single branch, and then upward it still springs until it reaches to three hundred and sixty-three feet; that is, it overtops St. Paul's cathedral in London by twenty-three feet, measured from the ground.

But how old is this tree? It is calculated that it is between three thousand and four thousand years old. So that it was in its early youth when Isaac was born; was yet a stripling when David kept his father's flock in Bethlehem; and it had not reached its vigour when the gospel was first preached by the apostles. Even now it seems in its full health and strength.

A second engraving shows a part of the bark of "the mother of the forest," as it is now to be seen at the Crystal Palace at Sydenham. A portion of the bark, a foot and a half thick, was stripped from the trunk to the height of more than a hundred feet. Four months were occupied in its removal: every piece, as it was cut down, was carefully numbered, and it has been put up exactly as it originally grew.

The inside of the bark is fitted up as a room with table and chairs; and as you look up the inside or the outside, and think that the portion of the tree that you gaze upon is not one third of the whole height, you may form some idea of what this great tree is as it still stands in its own native forest.

We will proceed in our perambulations in search of some remarkable trees in an East Indian forest. And the first that arrests attention is one of the fig-tribe—the famous *Banian tree*.[1] The fruit is small, being about the size and

[1] Ficus indica.

colour of red cherries. The leaves, which are clean-looking and heart-shaped, are used by the Hindoos for plates and dishes. The most singular quality of this tree is its drooping tendency, by which its branches reach the ground, and take root. At first, these hang down like pieces of rope, they then reach the ground, and plant themselves. These thicken rapidly, till they become like the parent trunk. These again send out their branches here and there, till at



THE BANIAN TREE.

length a single tree grows into a small wood, sufficient to shelter a regiment of horse-soldiers. One of these trees on the banks of a river consisted of three hundred and fifty trunks: its smaller stems exceeded three thousand, and they

were yet on the increase, in due time to become trunks themselves. Among the branches were multitudes of monkeys, wild peacocks, and singing birds. Under its shade seven thousand men have been known to find shelter.

But the finest specimen of this noble tree is said to be about seven miles from the town of Colombo, in Ceylon. Two roads run through its stems: some of its fibrous shoots have been trained so as not to intercept the light; while others hang half way down, and cover many beautiful palms, which have been planted in the vacant spaces. It throws a shadow, at noon, over four acres of ground.

Milton[1] presents a picture of the banian tree

> So counsell'd he, and both together went
> Into the thickest wood: there soon they chose
> The fig-tree; not that kind for fruit renown'd,
> But such as at this day to Indians known
> In Malabar or Deccan, spreads her arms,
> Branching so broad and long, that in the ground
> The bended twigs take root, and daughters grow
> About the mother tree, a pillar'd shade,
> High overreach'd, and echoing walks between.
> There oft the Indian herdsman, shunning heat,
> Shelters in cool, and tends his pasturing herds,
> At loop-holes cut through thickest shade. Those leaves
> They gather'd, broad as Amazonian targe,
> And with what skill they had, together sew'd,
> To gird their waist.

Southey also has described one of these far-famed trees:

> 'Twas a fair scene wherein they stood,
> A green and sunny glade amid the wood,
> And in the midst an aged Banian grew.
> It was a goodly sight to see
> That venerable tree,

1 *Paradise Lost*, book ix.

O'er the lawn irregularly spread,
Fifty straight columns propp'd its lofty head;
And many a long depending shoot,
Seeking to strike its root,
Straight like a plummet, grew towards the ground.
Some on the lower boughs, which cross'd their way,
Fixing their bearded fibres round and round
With many a ring and wild contortion wound;
Some to the passing winds at times with sway
Of gentle motion swung;
Others of younger growth, unmoved were hung
Like stone-drops from the cavern's fretted height,
Beneath was fair and smooth to sight,
Nor weeds nor briers deform'd the natural floor;
And through the leafy cope which bower'd it o'er
Came gleams of chequer'd light.
So like a temple did it seem, that there
A pious heart's first impulse would be prayer.

There is a stripling banian tree planted in a tub at Kew Gardens Conservatory, which, were it allowed to have its way, would grow to its full extent, push all its neighbours out of doors, and fill the large room from one end to the other.

There is another East Indian tree whose large branches bend downwards, take root in the earth, and increase until one tree extends to the size of a grove. This is the *Mangrove*,[1] whose height is about fifty feet. It is found chiefly on the seashore. Not only birds build their nests in the boughs, but oysters, crabs, and other shell-fish, attach themselves to the lower branches; this is particularly the case when the forest has been inundated, for, as the waters retire, the shell-fish lodge themselves among the lower branches.

1 Rhizophora mangle.

In the same district of India flourishes the *Deodar*, or *Indian Cedar*,[1] which grows about 150 feet high; its branches, richly covered with a foliage of a bluish-green colour, spread over a large extent of ground. Its wood is among the most durable in the world, bears a high polish, and looks like brown marble.

But of all the fine trees in this region is the *Pippul*,[2] said to be "the most completely beautiful of all which adorn the wide garden of nature." The Hindoos call it "the tree of God," and "the religious fig," because under its shade they suppose their god Vishnu was born. It is held by them in such veneration that the form of its leaves is only allowed to be painted on furniture used by their princes.

Knox,[3] who resided in Ceylon for twenty-one years, from 1651 to 1671, thus describes the care taken by the natives of this tree, and the respect in which it is held by them. "The people pave round under them, sweep often under them to keep them clean; they light lamps, and set up their images under them; and a stone table is placed under some of them to lay their sacrifices upon. They set them everywhere in towns and highways where any convenient places are; they serve also for shade to travellers. They also plant them as memorials of persons deceased, in the place where their bodies were burnt. It is held meritorious to plant them, which they say he that does shall die within a short time after, and go to heaven. But the oldest men only, who are nearest death in the course of nature, do plant them, and none else, the younger desiring to live a little longer."

The unbelieving Arabs, however, use the leaves for tanning

1 Cedrus deodara. 2 Ficus religiosa.
3 "Historical Account of Ceylon," published in 1681.

leather, and the Chinese for making a transparent paper. These latter people also feed vast numbers of silkworms on this tree.

We will now pass to Sumatra, a large island in the Indian Ocean, and we shall there find large forests of the *Gutta-percha tree.*[1] "Gutta" is the native name for gum, and "percha" is the Malayan name of a forest tree. The virtues and uses of this tree have not been long known to us. Previous to 1844 its very name had not been heard in England. About that time an English physician was walking through a forest when he saw a woodman at work. Observing that the handle of his axe was of a substance quite unknown to him, he inquired what it was made of, and was told that it was the juice or gum of a tree, which could be moulded into any form by merely dipping it in hot water, after which, when cold again, it became quite hard. On examining the tree the physician found the juice lying in straight lines down the trunk, and that by cutting small holes in the trunk, it freely flowed out, of a whitish colour. On hardening it became darker in appearance. In the first instance about two hundredweight were sent to England as an experiment; its utility was soon discovered, and now several hundred tons are imported to England every year.

Gutta-percha is largely used for soles of shoes, piping, bottles, and other purposes where durability is required. It is also turned to account for finer and more ornamental work, some, indeed, of considerable beauty. But its highest use is in the coating it forms to electric cables. Little did the worthy physician who brought the first piece of gutta percha to our shores imagine that in a short time it would be well known throughout the land, and regarded

1 Isonandra gutta.

as one of the most valuable substances possessed by man. Besides the juice, the tree yields a pleasant fruit, a valuable oil, and a drug for the chemist. Its flowers are used by the natives of the Indian peninsula for food, and its wood is a good timber. So we may well regard the gutta-percha tree as one of the most valuable gifts of Divine Providence.

Few who are in the habit of either using or seeing the beautiful Japanese varnish, know whence it is obtained, or are familiar with the mode of procuring it. The *Varnish tree*[1] grows wild in Sumatra, China, and Japan. The Chinese call it "tsi-shoo." It has some resemblance to the ash, with leaves shaped like those of the laurel, of a light green, and with slight down upon them. When these trees are seven or eight years old they are capable of supplying the varnish, which is gathered by cutting their bark about two inches in length in numerous places, and in each incision the edge of a hollow shell is forced. This operation is performed in the evening, as the varnish flows only in the night. The next morning the shells are either wholly or partially filled. It is computed that fifty trees, which can be attended by a single person, will yield a pound of varnish every night. The natural colour of the fluid is white, and looks like cream, but it becomes dark on exposure to the air, and hardens to the consistency of resin.

"The Chinese," says a traveller in the East, "carry this prepared resin in large pots from Siam and Camboja to Japan, where it is disposed of to great advantage. The Japanese are the most skilful in preparing and ornamenting all kinds of wooden articles with this varnish, of which they annually use large quantities, and their black, lacquered

[1] Stagmaria verniciflua.

works are dispersed, on account of their elegance, over all parts of the world."

Another tree, very useful to the Chinese artisans, is the *Kou-Chou*, which resembles a fig tree. It yields, on incision, a milk or liquid gum, which they use in gilding with leaf gold. They wet their pencils with it, and then draw their figures and ornaments with the gum upon wood, over which they apply the leaf-gold, which is so firmly cemented by the gum that it never detaches. This gum is in its effects like the transparent varnish now used in Europe, but more tenacious.

Although no production of China is of so much importance to us as tea, the *Bamboo tree*[1] is, perhaps, to the Chinese themselves the most valuable article their land produces. It is used for almost every conceivable purpose, and has been called "a universal material." It grows to the height of about eighty feet, bears neither blossom nor fruit, the leaves are narrow and small; many of the canes are much thicker than a man's arm. For building purposes its largest stems serve for pillars, rafters, and planks; its leaves are thatching for the roof, and the small fibres are matting for the floor. For household use it is manufactured into bedsteads, tables, chairs, and other articles of furniture; also into umbrellas, hats, musical instruments, baskets, cups, brooms, soles of shoes, pipes, bows and arrows, sedan-chairs, and wicks of candles. Its fine fibre is made into twine; its shavings for stuffing of pillows; its leaves are employed as a kind of cloak for wet weather, called "a garment of leaves;" small shoots form the celebrated chopsticks, used in conveying food to the mouth; other tender shoots

[1] Arundo bambos.

are boiled and eaten ; the pulp is formed into paper, the pith into good pickles and sweetmeats, and a thick juice, which is pressed from it, is said to be an excellent medicine.

For maritime purposes, it is transformed into boats, floats, sails, cables, rigging, fishing rods, and fishing baskets. By simply tying together a few bamboo-reeds a swimming jacket, or life preserver, is constructed capable of containing



THE BAMBOO TREE.

one or more persons. In agriculture, carts, wheelbarrows, ploughs, water pipes and wheels, fences, barrows, and many other instruments of husbandry, are made from it. In the manufacture of tea it helps to form the rolling tables, drying baskets, and sieves. "However incredulous," says Mr.

Fortune,[1] "the reader may be, I must still carry him a step farther, and tell him that I have not enumerated one half of the uses to which the bamboo is applied in China. Indeed, it would be nearly as difficult to say what the bamboo tree is *not* used for as what it is. It is in universal demand in the houses, in the fields, on water and on land, in peace and in war. Through life the Chinaman is almost dependent upon it for support, nor does it leave him until it carries him to his last resting-place on the hill side, and even then, in company with the cypress, juniper, and pine, it waves over and marks his tomb."

Well does Macculloch ask concerning these and many other peculiar specimens of the vegetable world, "Are they not exactly fitted for some very singular wants of man? Were they not exactly what we should have made for ourselves, had we known how? Have not our wishes been fulfilled, often in the most unhoped-for manner?"[2]

In the same district where the bamboo is found there flourishes the *Gamboge tree*.[3] It is as large as an English oak, and makes a very handsome appearance. The substance known to painters as gamboge is obtained by cutting pieces of bark from the tree, early in the morning, when a gum oozes out, which soon hardens, and is then fit for use by artists. It is also employed by physicians as a medicine. About eight thousand pounds' weight of gamboge are brought to England every year. The finer sorts are supposed to be obtained from the country of Siam by the Chinese, who sell it to the English trader. In Ceylon, it is much employed in the idol temples, and the idol Boodh is always represented in yellow garments. In using it in

1 *Residence among the Chinese.*
2 Macculloch's *Proofs of the Attributes of God*, vol. iii.
3 Cambogia gutta.

painting, the young especially should exercise care, and not place the hair-brush or pencil in their mouth, as gamboge is a vegetable poison.

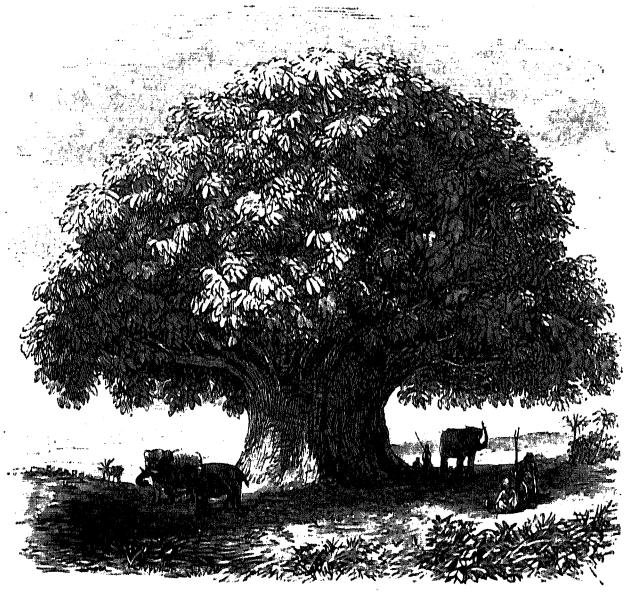
Among the other curious botanical productions of China is the *Camphor tree*.[1] It belongs to the family of laurels, and grows to a large size. The leaves and branches are put into an iron vessel with water, and boiled. Over this vessel is a layer of straw, in which the camphor lodges as it rises with the steam. After it is purified, it is melted into lumps for sale. The tree also yields an oil, which is useful in medicine. A small hole is cut in the trunk, from whence the fluid flows, and is caught in the hollow of bamboos. The camphor tree is likewise found in Borneo and Sumatra.

The *Tallow tree*[2] is also a native of China. It resembles a pear tree in appearance; but when young its shiny purplish leaves and brilliant red blossoms give it the appearance of a glorious nosegay. The vegetable tallow is contained in a large berry, and covered with a husk like a common chestnut. This substance, when carefully formed into candles, yields a brilliant light, without smoke, and almost without smell, and is found nearly equal to the best waxlights.

This reminds us of another tree, the *Torch tree*,[3] found in the South Sea islands, the fruit of which is slightly baked, and then strung upon the stalk of a cocoa-nut leaf. Each nut burns for two or three minutes, and then kindles the next in the row. A canoe filled with natives goes out at night, on a fishing excursion; then these lighted berries illumine the wide ocean. We may conclude that these vegetable torches are a great comfort to the poor islanders.

[1] Laurus camphora. [2] Croton sebiferum. [3] Aleurites triloba.

Observation has taught us that forest trees increase by coatings from without, and that every coating forms a sort of ring round the tree. Every year a new ring is formed, so that by cutting across the stem, and counting the number of rings, a tolerably correct approach may be made to the knowledge of the age of a tree. Among those whose number of rings excite astonishment is the *Baobab*, or *Monkey-*



THE BAOBAB TREE.

bread tree.[1] It is a native of Egypt, Senegal, and the Cape de Verd islands. Cape de Verd, which means the "green cape," was so called from the great number of these trees which cover the mountains and the coast. They were first

1 Adansonia digitata.

described by Adanson, a French traveller, and have been named after him. He found some specimens near Goree, which he calculated were from five to six thousand years old. Though some doubt if this be quite true, yet Baron Humboldt says there can be no doubt that the baobab is the oldest tree known to grow on the earth. Some specimens he saw measured ninety to one hundred feet round the trunk, and the great branches were equal to good-sized trees.

Dr. Livingstone found this tree on the banks of the river Zambesi, in the interior of Africa. He says that its vast height made the other trees of the forest look, in comparison, like mere bushes. One was eighty-four feet in circumference, and another one hundred.[1] The wide expanse of its branches is so vast that at a distance it looks like a small forest rather than a single tree; and beneath its shade the wearied negroes lie down from the scorching heat of the sun, and the traveller finds shelter at night or from the storm. The interior of the trunk contains much pith, which in some parts dries up, and leaves a cavern twenty feet high, and sixty feet round. These hollows are often used as burial places by the negroes. The fruit, which is about the size of a lemon, is a great favourite with the monkey tribes—hence one of the popular names of the tree. Powder is made of the bark and leaves, which is used by the negroes as sauce to their food. The white blossoms are very large: they spread open their surface to the light of the sun, and close when the shadows of evening draw on, so that the flowers have been called "beauties of the day." To these thousands of bees are enticed, which build their hives in the stems of the tree, and abundance of fine honey is produced.

[1] "The Zambesi and its Tributaries."

Another native of Africa is the *Cork tree*.[1] It is also largely cultivated in Spain and other warm countries. It is of the same family as the oak, and, like it, bears a profusion of acorns. The leaves are a bright evergreen, of an oval shape. The substance called cork is the bark of this tree. When the tree has attained the age of fifteen years the bark is removed for the first time; but it is fit only for fuel or tanning. The second disbarking takes place in eight or ten years afterwards, when the cork is fit for the floats of fishing nets. But in eight or ten years more the cork is of good quality, and so continues to improve until the tree is two or three hundred years old. This peeling every eight or ten years is said to promote the vigour and health of the tree. The ancient Egyptians frequently made their coffins of cork, and also jackets to assist in swimming as the moderns do. In some parts of Spain the walls of houses are lined with it, to render them warm and free from moisture; but the chief use with us, as it was with the Greeks and Romans, is in stopping bottles.

Before we end our sketches of forest scenery, we must glance at what remains of the famous forest of Lebanon. In the days of king Solomon, and indeed for long previous ages, the mountains of Lebanon, or Libanus, in the northern part of Syria, were covered with the far-famed *Cedar*.[2] This Jewish king largely employed its wood in the erection of the temple and his regal palace. The quantity used by him must have been great, as the temple itself was called by the name of "Lebanon;" and Solomon's house was described as "the house of the forest of Lebanon."[3] The wood was also largely employed in the building of the

[1] Quercus suber. [2] Cedrus Libani. [3] Zech. xi. 1; 1 Kings vii. 2.

second temple. Many of the ancient heathen temples were built of the cedar, as the temple of Diana at Ephesus, and of Apollo at Utica. The reason for using it was probably from its agreeable fragrance, and that the bitter taste tended to preserve it from the destruction of worms and insects. In the ruins of a building, two thousand years old, beams of it were found without any signs of decay.



THE CEDAR.

The cedar grows as large as the oak, and is green all the year round. The leaves are arranged in beautiful tufts, and are of a deep green colour. The boughs are broad and sweeping, and the foliage lies flat, in layers one above another. It is of the same class as the fir and the pine, and its fruit, like theirs, is a scaly cone.

Travellers have described the present appearance of the cedar forest of Lebanon.

The Rev. S H. Calhoun, a missionary in Syria, has recently supplied the following description:—"This region of the cedars is not far from seven thousand feet above the level of the sea, and is surrounded on the north, east, and south by a still higher range of mountains. It is open towards the west, and looks down upon a vast mass of ragged mountains, and beyond them to the 'great and wide sea,' the Mediterranean. The scenery is most majestic and impressive. The cedars are few in number: I have been counting them to-day, and find them to be about four hundred; our actual count was three hundred and ninety-three. I should think not more than a dozen were less than a foot in diameter. Many of them are two and three feet, and occasionally five feet. Several of them are from six to ten feet. One that I measured this morning is forty feet in circumference, about two feet from the ground. A little higher, it sends forth five immense branches, each from three to five feet in diameter, which shoot up almost perpendicularly, thus in reality constituting five trees of great size. Many of the cedars are double, and even triple and quadruple; that is, from one root apparently, there grow up two or more trees united as one for two or three feet or more, and then separated, thus forming independent bodies, straight and beautiful.

"As to the age of the trees, I do not know that history says much. In a chip two inches thick I have counted sixty circles, which would be equal to sixty years. A tree of six feet in diameter, according to this calculation, might be more than two thousand years old. The one already alluded to would be, at this rate, more than four thousand years old, reaching nearly to the time of the flood.

Travellers have been in the habit of cutting their names on these larger trees: one date I find as far back as 1693; at which time, as appears, the tree must have been nearly as large as at present. From such data as these we may no doubt infer for them a very great antiquity.

"The ground occupied by this grove of cedars is not far from two hundred and ten yards in diameter, in every direction. Twelve of the trees, the largest and oldest, present little of symmetry or beauty. The storms and tempests of so many ages and generations have sadly broken and disfigured their once wide-spread branches, and bowed down their lofty heads. Their majesty in ruins is now their greatest charm. None of the works of man which I have seen, not even those of Baalbec, so impress and awe my mind. One connects them with the great Creator. 'The trees of the Lord are full of sap, the cedars of Lebanon which He hath planted.' The remainder of the grove consists in general of straight, well-formed trees, with wide-spreading arms, gradually diminishing to the top, and reaching to the height of from seventy to a hundred feet.

"I may also mention a fact which has interested me. There are two trees of great size, standing about twelve feet apart: a large and high branch of the one has extended itself to the other, and has become most firmly united to it by growth, the bark completely covering the seam; and, what is still more remarkable, the latter tree now apparently depends on that strong arm for its very existence, for in consequence of an extensive defect near the root, the vast superincumbent weight would evidently soon prostrate it, were it not protected by its more aged and stronger companion.

"The grove of cedars is preserved by the superstitious

reverence of the people; they have many traditions of the injuries that have occurred to those who ventured to use the cedar for firewood; one of which is, that a man who was heating some milk had it turned to blood while he was boiling it."

Dr. Robinson, referring to the somewhat secluded position of the ancient cedars now remaining, says, "They stand in a hollow, as if ashamed," verifying the prophetic allusion (Isa. xxxiii. 9), "Lebanon is ashamed." There is comparative desolation in this once glorious region:—

> Where are the goodly cedars now,
> That from the stately mountain's brow
> Look'd once upon a land of glory?
> How thinly scattered now they stand,
> A small and melancholy band,
> Recorders of their own sad story!

The Scripture references to the cedars of Lebanon are numerous. In the poetical language of the sacred writers, they denote kings and princes.[1] The breaking down of the high and mighty cedars is employed to show the majesty and power of God.[2] The spiritual prosperity of the righteous is compared to the growth of this noble tree.[3] And the glorious results of the reign of Christ are predicted under the figure of the Lord planting the cedar tree in the wilderness.[4]

It has been lately found by the Rev. H. Tristram, who travelled through a district of Lebanon not previously explored, that the cedar forests formerly extended many miles beyond the present celebrated group of trees. He found large clusters of fine cedars at various spots on the mountains and in the ravines, which he thinks formed parts

1 Isa. ii. 13. 2 Psa. xxix. 5.
3 Psa. xcii. 12. 4 Isa. xli. 19.

of one great forest in ancient times. It would appear, indeed, from the prophet Isaiah, that in his days the mountains of Lebanon were thickly covered with forests of this tree: a knowledge of this fact will aid us in the application of the words, "Lebanon is not sufficient to burn, nor the beasts thereof sufficient for a burnt-offering."[1] Though the trembling sinner were to make choice of these lofty mountains for the altar, and were to take all the herds of cattle that feed on them for a sacrifice—costly as the offering would be esteemed,—and then were to cut down all their forests for fuel—fragrant as the incense would be,—all would not avail to atone for sin. The just and holy law of God requires a nobler altar and a more precious sacrifice:—these we behold in our Lord Jesus Christ; for us he was offered on the cross; and now a full pardon and eternal life are offered to all that repent and believe on him.

[1] Isa. xl. 16.



IV.

The Palm House.

It waved not 'neath an eastern sky,
Beside a fount of Araby;
It was not fann'd by southern breeze
In some green isle of Indian seas;
Nor did its graceful shadows sleep
O'er stream of Afric, lone and deep.
But fair the exiled Palm tree grew,
'Midst foliage of no kindred hue.

Hemans.



KEW OLD PALACE.

THE PALM HOUSE.

THE PALM TRIBE—Date Palm—Betel Palm—Talipat, or Umbrella Palm—Fan Palm—Oil Palm—Cocoa-nut Palm—Wax Palm—Cabbage Palm—Vegetable-Ivory Palm—True Sago Palm—Palmyra Palm—Peacock-leaved Palm—Burning Palm—Ginger-bread Palm—Comb-spined Palm—Broom Palm—Wild Palm—Double Cocoa Nut—Ratans, or Calamus Palms.

IF we have profited by our ramble in the Royal domains at Windsor, we shall be prepared for a journey of a few miles, which will bring us to another of the possessions of the British crown—KEW GARDENS.

family, if spending a day's holiday in the country, could only peep over the hedge or wall; but now the humblest are at liberty to enjoy the beauties of the place as well as their richer neighbours, and behold some of the wonders of creation, which, when rightly understood, may make them wiser and happier than they were before.

"Look at the state of things in former days," says a gentleman who has described the grounds. "You rang at a bell beside a wooden gate; you were let in as if by stealth, and as if the gatekeepers were ashamed to see you come, or yourself were ashamed to be seen there. And, when you were there, you were dodged by a gardener as if you were likely to carry off the St. Helena willow-tree in your button-hole, or one of the smaller hot-houses in your waistcoat pockets. You entered unwelcome, you rambled about suspected, and you were let out with manifest gladness at your departure. How gratifying is the contrast now! You go in by one of the most beautiful entrances that have been erected in modern times, whether we regard the effect of the whole design, or the taste shown in each particular gate. There is no unlocking of a dark door—you walk in freely.

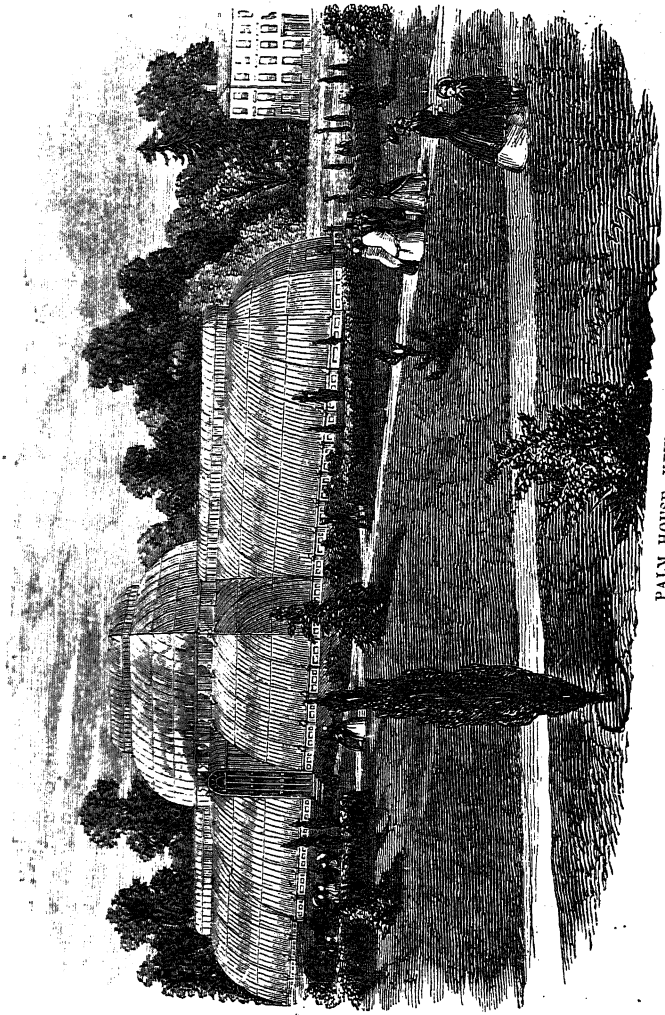
"Turn to the left; you wander amid the more secluded scenery of the old gardens, until you reach the hot-houses and the adjacent beds. Or walk straightforward along the bold, broad lawn: soon after you enter, visit the Conservatory on your right; and at the end of this walk turn to the left, and ramble the far finer walk, adorned on either side by flower-beds, lawns, and shrubberies, and ending in the new

Conservatory, or Palm House, with its terrace and sheet of water, all bounded by the views in the pleasure grounds beyond. It is scarcely to be believed that in so short a time a change from the old close, cribbed, cramped, suspicious system could have been so complete. And yet the work is done, and well done. The student is free to enjoy access to all these daily increasing stores, and every person is at liberty to enjoy the objects of pleasure presented to his view."

The principal entrance to Kew Gardens is at the end of a pretty village green, not far from the banks of the Thames. The beautiful gates, which first attract the attention of the visitor, were erected in 1845. They open upon neat grass plats, across which runs a broad pathway, with stately trees on either side.

Shortly after we enter, we pass the OLD PALACE, in which royalty has lived and revelled and died; then, around the back of the Old Arboretum, with its thick clusters of shrubs and trees, we come to a building called the Temple of the Sun, and so onward to the great PALM HOUSE; or, if we take another path, we shall at once come in sight of this latter point of attraction.

The Palm House is formed chiefly of glass. The whole length is about 360 feet, and in the centre it is sixty feet high. About 45,000 square feet of glass were used in the roof and sides. A gallery runs round the lofty centre, to which we ascend by an iron staircase, where climbing flowers twine their slender green stems and many-coloured blossoms. This gallery enables us to view the plants from above, and brings us on a level with some of the loftiest trees. It is not often that the tops of trees can be seen in so easy a manner; and it is the more desirable in this place, as the heads of some of the trees claim particular attention.



PALM HOUSE, KEW.

We must not fail to notice the colour of the glass of this house. It is of a greenish tint; a colour that subdues the strong rays of the sun, and has been found best to agree with the growth of the palms beneath.

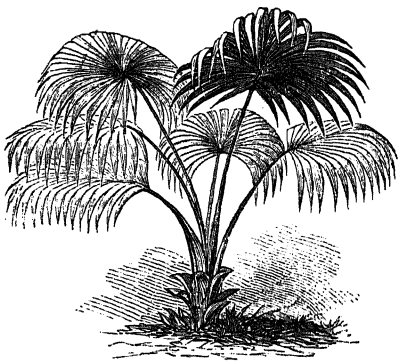
A large variety of trees and plants have been gathered from all parts of the world, and a home found for them here. Those that first claim our notice are the trees which give their name to the place. The palms have been called "the princes among trees," to which honour their stately growth, beautiful foliage, and useful productions, may entitle them. They "combine the highest possible beauty with the utmost imaginable utility." The name of these trees is taken from the Latin word *palma*, "a hand," from the supposed resemblance of their broad leaves to the human hand. On the same account the date, which is the fruit of a species of palm, is called *dactylus*, a finger, not so much from its form, as the mode in which it grows in clusters, spreading out like the fingers of a hand.

Palms are found in different situations, and in various parts of the world. Indeed, they are among the oldest tenants of the globe, as they are found in a fossil state in the midst of our coal formations. At the present time they grow beside rivulets, streams, and wells; they occupy the shores of the ocean; they adorn the sides of lofty mountains; they collect into dense forests; they spring up in clusters over the plains, or appear singly in the desert.

The palm tree in the wilderness
Majestic lifts its head,
And blooms in solitary grace
Where all around is dead.

Their appearance also varies in different species. In some, the trunks are as graceful as a reed, others are swollen

in the middle, and become narrow towards the top and the bottom; in several, the base of the stem commences at some distance above the surface of the earth, being upheld by an arched scaffolding of roots one or more feet high. The surface of the stems is also different: here is one smooth and polished; and here another which is rough and marked with rings; and others again, covered with bristly hairs, or prickly scales. Then as to their foliage: some have



A YOUNG PALM.

leaves ten feet long, and others reach to twenty feet. The form of the leaves is equally diverse: many are like feathers, some like the teeth of a comb, and others similar to the ribs of a fan. In a few instances, the leaves are of a dark and shiny green colour; in others, of a lighter tint, with silvery white on the under side; and some are adorned with coloured spots and stripes.

The direction of the giant leaves equally claims our notice. In some palms they point upwards, but in others they gracefully hang downwards. The form and colour of the fruit

strangely contrast. How great is the size of the large triangular cocoa-nut compared with the berry of the date! One tree bears golden-coloured seeds, which hang down like clusters of grapes; while other seeds collect at the top, behind the leaves, as a group of hard brownish nuts.

At the present time upwards of five hundred different species of palms are known; and it is said there are many others of which no description has been given. Baron Humboldt states that in one of his journeys in South America he found a new species in every fifty miles.

The uses to which the palm is applied by man have been celebrated by Arabian writers in prose and verse, and are enumerated by them as three hundred and sixty. It is certain, as Humboldt asserts, that they yield "wine, oil, wax, flour, sugar, salt, and the materials of the habitations, vessels, weapons, and clothing of many nations." And what is to be carefully observed, as illustrating the goodness and wisdom of Divine Providence, they abound in countries "where corn-grains cannot be raised, in consequence of the great dryness of the soil, and the want of moisture in the air."

There is another important service rendered by the palm tree, which in a sultry climate must be highly valued. It points out where water may be obtained. Find a palm tree, and however dry and sterile the ground may be in which it grows, we shall rarely fail to discover water at its roots. This may remind us of an incident in the journey of the children of Israel in the wilderness. "And they came to Elim, where were twelve wells of water, and threescore and ten palm trees; and they encamped there by the waters."[1] "The palm tree," says M. Laborde, "presents itself to the eye of the thirsty traveller like a friendly lighthouse, pointing

[1] Exod. xv. 27.

out to him where water is to be found to quench the thirst, and a charitable shade under which to repose."[1]

Solomon built a city in the desert called Tamar, or Tadmor, and afterwards known as Palmyra, from the abundance of palm trees that grew near the spot. Jericho, also, was "the city of palm trees."[2] The Romans, when they wished to represent Judea upon their coins and sculptures, drew the figure of a woman sitting under a palm tree; from which it is inferred that this tree was formerly more common in Palestine than it is now.

In festivals and seasons of rejoicing after victory, the ancients carried branches of palm in their processions. When the Saviour was on his way to the city of Jerusalem, to keep the passover, "a great multitude took branches of palm trees, and went forth to meet him, and cried, Hosanna: blessed is the King of Israel, that cometh in the name of the Lord."[3]

The same apostle that records this scene of triumph, after his Lord had ascended to heaven, beheld in vision another glorious throng bearing in their hands the same symbol of joy and victory. "Lo, a great multitude, which no man could number, of all nations, and kindreds, and people, and tongues, stood before the throne, and before the Lamb, clothed with white robes and palms in their hands; and cried with a loud voice, saying, Salvation to our God, which sitteth upon the throne, and unto the Lamb."[4]

But we pass from the brief consideration of palms in general, that we may contemplate some of the most important of the tribe.

The first that claims attention is the *Date Palm*.[5] This

[1] "Travels in Arabia Petræa."
[2] Deut. xxxiv. 3.
[3] John xii. 13.
[4] Rev. vii. 9, 10.
[5] Phœnix dactylifera.

tree is largely distributed over eastern lands, especially Egypt, Barbary, and Arabia. It is the most conspicuous object in the oases, or verdant spots, found in the great African desert, where they appear in beauty and fruitfulness :—

'Mid rocks, and sands, and barrenness,
How beautiful to see
The wild palm in its desert dress—
The solitary tree!

Alone, amid the silent wild,
It rears its spreading crest;
The boundless desert's favoured child,
In constant verdure drest.

An emblem of that faith that cheers
The pilgrim on his road,
Through life's dark vale of care and tears,
Beneath his earthly load.

For, like that faith alone it stands,
A bright oasis in the sands,
With hand-like leaves against the sky,
Pointing to immortality!

"A forest of date trees," it is said, "presents a very singular sight to an European traveller; in some parts of Barbary they are as much as two leagues in extent, and their verdant crests touching each other, produce the appearance of an immense natural temple, whose silence is only interrupted by the concert of numerous birds, the only inhabitants of those solitary places. Though the country is covered with masses of barren sand, the ground beneath the shelter of these grandees of the desert is covered with flowers of every hue, while the stems of the trees themselves are festooned with numerous beautiful climbing plants."

The date palm shoots up its straight and tapering stem to the height of fifty to sixty feet. The stem is marked by numerous ring-like ridges. The bright green leaves are on the top, and drop their feathery shapes like a canopy. A large group of flowers appear in what is called a spathe, one of which often contains 12,000 blossoms; and three such clusters are found on each tree. One species of the palm is said to exhibit the great number of 200,000 flowerets in a single spathe.



SPATHE OF DATE PALM.

This tree produces its fruit under its leaves. It begins to bear at about six years of age, and is fruitful for upwards of two hundred years. Each bunch of fruit weighs about twenty-five pounds, and one tree yields about a hundredweight every season. Dates are a principal article of food in many parts of the east. They are eaten green, dried, or beaten into meal, and serve for all seasons of the year. The Arabs have a saying that "a good housewife may furnish her husband every day for a month with a dish of dates differently prepared." They also boast of its medicinal virtues. From the leaves they make couches, baskets, bags, mats, and brushes; from the branches, cages for their poultry; from the fibres of the boughs, thread and rope; from the sap, a cooling drink; the body of the tree serves for fuel; and their camels are fed on the date-stones. Indeed, among the many useful trees given by the kind pro-

vidence of God to the eastern people, there is not one more serviceable or more prized.

An Arab woman came to England, having charge of some



THE DATE PALM.

children, and remained here four years. On her return to her people she was surrounded by them, and assailed by questions. She answered, "The country is like a garden,

the people are rich, they have fine clothes, fine houses, fine horses, fine carriages, and they are said to be very wise and happy." On hearing this her audience became envious of England, and somewhat discontented with their own condition. They were departing with these feelings, when the woman happened to say, "One thing is certainly wanting; there is not a single date tree in the whole country." Having learned that she was quite sure of this, their feelings were quite changed, and they went away wondering how man could live in a country where there were no date palms.

The harvest of dates is expected with as much anxiety, and is attended with as great rejoicing, as the vintage in the south of Europe, or as harvest-home in England. The gathering of this valuable fruit is a labour of some hazard, as the trunk of the tree is lofty, almost straight, and bulky; it is also necessary to avoid the sharp, hard ridges and projections. But with the aid of a rope slipped under the armpits, and with knees and hands firmly grasped to the trunk, the top of the tree is attained and the fruit is plucked.

The *Betel Palm*[1] is a native of the East Indies. It has a straight trunk; and though not one of the tallest, it often reaches fifty feet in height. It is grown for the sake of its nuts, which are of a reddish-yellow colour, and about the size of a hen's egg, hanging in rich clusters, and forming a pretty contrast with the bright green of its leaves. Most of the Indian villages are adorned with plantations of this graceful-looking tree. The nuts, of which each tree yields annually about fourteen pounds' weight, are not good for food, but are kept in the mouth as some persons keep tobacco—a very bad practice in either case. It is stated

[1] Areca catechu.

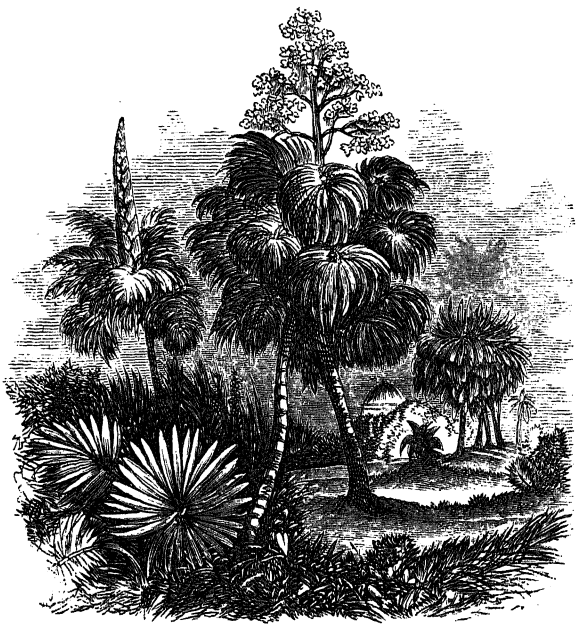
that some of the Hindoos, and other eastern people, would rather go without meat or drink than their favourite betel nuts. They are also used for dyeing cotton cloths, and the



THE BETEL PALM.

stalks and timber are serviceable for many domestic purposes.

Another famous species of the tribe is the *Talipát* or *Umbrella-bearing Palm*,[1] a native of Ceylon and some parts of India. This is said to be one of the most beautiful objects in the vegetable kingdom. It measures ten feet round the trunk, and rises to the height of more than 180 feet. Its fan or umbrella-like leaves are of great size. A single one



YOUNG TALIPAT PALM.

will cover from fifteen to twenty men, and often serves as a canopy to a boat, or a tent for soldiers. A specimen leaf brought to England measured thirty-six feet round.

The structure of this wonderful leaf, and the disposition

1 Corypha umbraculifera.

of its fibres, are exactly like those of a fan; and it can be shut or spread open as a fan, and with as little exertion. It also serves for umbrellas, parasols, and hats. Cut into strips, from two to three inches broad, and ten to twenty feet in length, it forms the leaves of a Cingalese book. It is surprising how straight a Cingalese will write, or rather scratch with a graver, on a palmyra leaf, although he has no



support for it except his left hand. Native books of this material may be found nearly six hundred years old. The leaves are also employed for leases, deeds, and other legal documents. As their appearance changes with age, the native judges in Ceylon attempt to ascertain the antiquity of a document by feeling and smelling it.

The talipát blossoms only once during its life. The blossoms are inclosed in a spathe, or sheath, which bursts with a

loud report, and a beautiful plume of flowers quickly spring up, rapidly unfolding their leaves, and forming a rich crown to the tree. Beneath this crown hang the leaves in handsome clusters. When the flowers fall off, equally large bunches of fruit are seen in their place. As soon as the fruit has ripened, the tree dries up, and decays so rapidly, that in two or three weeks it is seen prostrate and rotting on the ground.

South America has a species allied to the talipát. It is known as the *Fan Palm*.[1] The Indians suspend its large and strong leaves, like hammocks, from tree to tree, one over another, as so many stories to a house. In the rainy season, when the rivers overflow their banks, they live in the upper story; and, covering the lower with clay, they light their fires therein and cook their food. The traveller by night, in sailing along a river, sees the flames of these fires in long rows, hanging as it were in the air. But, besides a dwelling, a supply of pleasant liquid is obtained from the tree, and the pith yields an abundance of sago: so that the poor natives of the part of the world where it grows find in it a dwelling, food to eat, and drink.

The *Oil Palm*,[2] which flourishes on the coast of Guinea, West Africa, is one of the most useful of the tribe. It agrees in its general character with the cocoa-nut tree. The stem is nearly thirty feet in height. The leaves are edged with strong thorns, which give to the trunk the appearance of being guarded with large double-edged swords. The leaves are twelve to twenty in number, and are nearly erect, forming a splendid upright crown. The fruit has the smell of violets, and is of the size of an egg. Large bunches of this fruit, of a beautifully rich yellow and red colour,

[1] Sabal umbraculifera. [2] Elais guineensis.

contrast finely with the bright green of the leaves. The pulp of the fruit is soft, and from it the palm oil of commerce is obtained. This latter is secured in great quantities, and is partly consumed by the negroes along with their rice and pepper, or in frying their fish; also as butter, medicine, and for the supply of their lamps. It is largely exported into Europe, where it is chiefly used in the manufacture of soap and candles, and to lubricate or "oil" machinery.

We now turn to another of the most valuable productions given to man—the *Cocoa-nut Palm*,[1] which obtains its name from *macoco*, the Portuguese word for a monkey, from three curious black marks, like eyes and mouth, on the outer husk of the nut.

This tree is found all over the tropical parts of the world, especially in the vicinity of the sea, growing within reach of salt water, and establishing itself upon reefs and sand-banks, as soon as they emerge from the ocean. Its appearance on these picturesque spots has enkindled the enthusiasm of the poets.

> Lo! higher still the stately palm trees rise,
> Chequering the clouds with their unbending stems;
> And o'er the clouds amid their dark blue skies,
> Lifting their rich unfading diadems.
> How calm and placidly they rest
> Upon the heaven's indulgent breast,
> As if their branches never breeze had known:
> Light bathes them, aye, in glancing showers,
> And silence, 'mid their lofty bowers,
> Sits on her noiseless throne.
>
> WILSON'S *Isle of Palms*.

Its great importance has caused it to be cultivated wherever the climate is favourable to its growth, more particularly as it bears fruit three times in a year. Indeed, ripe nuts and new

[1] Cocos nucifera.

blossoms are growing on the tree at the same time. The whole Brazilian coast, from the river San Francisco to a distance of 280 miles is, with few breaks, thus occupied; and it is estimated that no fewer than ten millions of trees



COCOA-NUT GATHERERS.

grow on the south-west coast of Ceylon. It is found in great profusion in the islands of the South Seas, where it rises like a slender column to the height of fifty to sixty feet.

In hot countries the uses to which the cocoa-nut tree is applied are very numerous and varied. Hence Herbert, one of our early poets, quaintly refers to it in a poem on "Providence:"

> The Indian nut alone
> Is clothing, meat and trencher, drink and can,
> Boat, cable, sail, and needle, all in one.

Its far-famed nuts afford oil, a kind of milk, and fruit; from the shell, spoons, cups, bowls, and bottles are made. The bark of the tree is formed into twine, cordage, cloth, and mats. The young buds are eaten as a vegetable; from the sap sugar is obtained; the leaves serve for sails, for boats, sacks, baskets, and thatch for cottages, and their ashes yield potash in abundance. And the timber is used for water-troughs, canoes, and various other purposes.

The *Wax Palm*[1] rears its lofty trunk to the height of 180 feet, or nearly the height of the Monument in London. It is a native of South America, and is one of the most singular and magnificent trees that grow. The trunk is marked with rings; which show the places where the large leaves once grew; but as they fell off, and the tree rose in height, they left behind the base or end of the leaf-stalks, forming these sharp, scaly rings. The leaves are from eighteen to twenty feet long. The tree has received its name from the fact that the spaces between the leaves of a full-grown tree are covered two inches thick with a coating of wax, of which excellent candles have been made. The fruit is bitter, but furnishes ample repasts for monkeys and parrots, and even the Indians eat it greedily.

The *Cabbage Palm*[2] is a native of the southern parts of

1 Ceroxylon andicola. 2 Euterpe montana.

America. It has a slender stem, though it grows to nearly 100 feet in height. The "cabbage" is formed by a cluster of young leaves at the top of the tree. It is tender when boiled, is eaten with oil and vinegar, and resembles a cabbage or artichoke in taste. A tree which has been fifty years growing is often cut down for the sake of a single cabbage, which cannot be otherwise reached. The long trunk of the tree is used as a water-pipe, and is said to become, when buried, as hard as iron; it is also used in forming of wharves or other buildings exposed to water, as it is not subject to the attack of sea and other worms.



YOUNG CABBAGE PALM.

The *Vegetable-ivory Palm*,[1] or as it is sometimes termed, the "negro's head," from the shape of its fruit, grows in large forests in America. The nuts at first contain a clear liquid, which often serves to refresh the weary traveller. This liquid becomes like milk, then thickens into cream, next to the substance of butter, and at length is converted into hard pieces as white as ivory. From these pieces of

[1] Phytelephas macrocarpa.

vegetable ivory, heads to walking sticks and umbrellas, buttons, and trinkets are often made.

The *True Sago Palm*[1] is a native of Asia. From the heart of the tree is gathered the useful article called pearl sago, used by English housewives in making puddings, but which in the east is made into bread. The stem reaches to nearly forty feet in height. It is a singular fact, that this palm, when young, is covered with prickly thorns, which protect it from wild hogs and other animals, but which drop off when the enlarging plant ceases to make it a tempting food for them. A single tree, of fifteen years' growth, will sometimes yield 600 pounds of sago. It is cut down when the pith containing the sago is ripe; the root then sprouts again, forms a trunk, and in due time yields another supply.

The *Palmyra Palm*[2] is another extensively diffused Asiatic tree of this kind. The trunk is from twenty-five to forty feet high when full grown, and tapers slightly upwards. The leaves are fan-shaped, about four feet long, and placed upon stalks of about the same length, which are prickly at their edges. The leaf is divided into about seventy rays. It was on these leaves that the Asiatic islanders principally wrote, before the use of paper became common from commerce with strangers. The leaf was prepared for this purpose much in the same way as the talipát leaf, to which we have already referred. The middle portion of the leaf is formed into punkahs, or fans, in Ceylon, the spines of the leaf stalk being previously cut off. They are sold either plain or lacquered, and a Buddhist priest is seldom seen without one. The fruit of this palm is about the size of a child's head, three-cornered and three-

[1] Sagus farinifera. [2] Borassus flabelliformis.

seeded. When young, the shell is so soft that it may be readily pierced by the finger, and the pulpy matter which it then contains is cool, sweet, and refreshing, and is used by the Chinese as a sweetmeat; but when ripe, all this changes to a hard bluish kernel, which is insipid and uneatable. The wood of the stem is known in commerce by the name of "palmyra wood." The sap, which is drawn from the tree in the same manner as from other palms, is described by Sir W. Jones as being "as pleasant as water fresh from the spring, and almost equal to the best mild champagne." Large quantities of sugar are obtained by the evaporation of the fresh liquor. Happy would it be for some eastern lands if it were always applied to so innocent a purpose; but arrack, a strong spirit, the bane of tropical India, is easily and largely distilled from it.

The Peacock-leaved Palm[1] was discovered by Humboldt in the underwood and thickets of Guiana, where the vegetation appears to be retarded by the continuance of the inundations. It is called by the Indians *juria*, or *cauvaja*, and on the banks of rivers is found growing in clumps of twelve or fifteen, so close together that they appear to spring from the same root. We are not aware that any part of this palm is applied to a useful purpose, but it is mentioned on account of a very remarkable circumstance in its appearance, namely, that the leaves are coloured like a peacock's tail. The leaves are fan-shaped, supported on short and very thick trunks, and are bent towards the ground; and at the centre of every leaf, circles within circles of alternate blue and yellow appear, the yellow prevailing towards the middle. It is also formidably armed with strong short thorns, which are very hard and woody, and broad at the base.

[1] Mauritia aculeata.

We might enumerate many other kinds of palms—all of which would supply illustrations of the care of God in providing for the wants of man, but we will only refer to two or three more, and then pass on to other objects which await our notice.

The tall *Burning Palm*[1] is so called because its fruit causes a stinging sensation when applied to the skin. Sugar and wine are obtained from it.

The *Doum Palm*,[2] or "gingerbread tree," so named, because the thick, soft, brown rind of the fruit is supposed to be like gingerbread. The kernels are made into beads. It is a native of Egypt.

Of noble stature is the *Comb-spined Palm*,[3] whose long leaves are armed with barb-like spines or hooks. "By means of these," says Sir William Hooker, "while running up among the stems and catching hold of the branches of other trees, the foliage and stem are propped. A yet more wonderful provision of nature is observed in the young and yet unfolded leaves of this plant, during the period when they insert themselves upwards among the branches of the forests; for then the spines are upright, and lie flat against the stalk of the leaf; not becoming reflexed till they are needed as a means of support."

Lastly, we glance at the *Broom Palm*,[4] and once more we are indebted to Sir William Hooker for an instructive quotation.

"Few," he observes, "have walked the streets of Lon-

1 Caryota urens.
2 Hyphæne Thebaica.
3 Plectocomia elongata.
4 Attalea funifera.

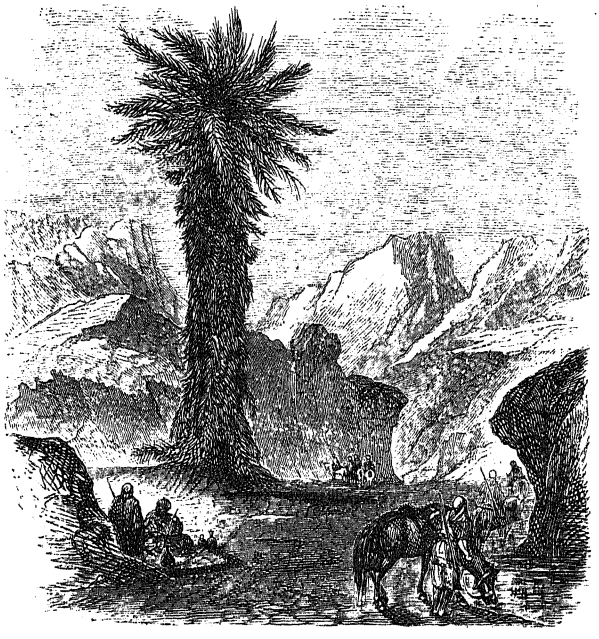
don without remarking that of late years those streets are, in places at least, kept peculiarly neat and clean, by the stiff fibres of a new material for making brushes and brooms; those of the machines as well as those employed by hand; and if any one is asked what may be the origin of this fibre, the frequent reply is 'Whalebone, I suppose.' But no; it is not of animal, but vegetable origin; the coarse fibre of a species of palm, which grows abundantly in Brazil, and is imported to Europe extensively from Pará, tied up in bundles of several feet in length, and sold at the price of £14 the ton, under the native name of *piaçaba*. This curious material, according to its stoutness and tenacity, is employed for cordage and mats as well as for brooms and brushes. The dilated base of the leafstalks separates into a long coarse fringe, which is collected by the natives and used in the country, or exported to Europe for the purposes above mentioned, and now constitutes a considerable article of commerce.

"The fruit, or nuts, are another article of commerce, long brought into England under the name of *Coquilla nuts*, and extensively used for various kinds of turnery-work, especially in making the handles of bell-pulls, umbrellas, &c.; for the shell, or *putamen*, is of great thickness, excessively hard, beautifully mottled with dark and light brown, and capable of taking a high degree of polish."[1]

A specimen of a *Wild Palm tree* was found by Laborde, near Mount Sinai. Speaking of this interesting object, he says—"What appeared to me most worthy of notice was a palm tree in its natural state, which we found above Ouadi Seleh. The palm tree is always represented with its summit pointed, its leaves bent back and spreading over its head,

[1] "Journal of Botany," vol. 1.

from whence gracefully hang dates as bright as coral; and we never imagine that all this elegance is produced by art, and that nature, less refined, has only attended to its preservation. Before us we saw the palm tree as it had grown



THE WILD PALM.

for many a year, forming a rampart of its perishing leaves, and again coming to life, as it were, in the midst of its wreck. Neglected by the Arab of the desert, who considers all attempts at cultivation beneath his dignity, the palm tree, at times, forms impenetrable forests; more frequently, how-

ever, it is found isolated near a fountain, as we see in the engraving."[1]

A curious specimen of a tree, allied to the palm tribe, is to be seen at Kew—the *Double Cocoa-nut tree*.[2] This tree grows in a group of islands called the Seychelles, near the coast of Africa. Many years before these islands were discovered, double cocoa-nuts (or as they were called "Solomon's nuts" and "treasures") were carried by the current of the ocean to the shores of the countries bordering the Indian Ocean; and as no tree was then known that bore such strange fruit, it was believed that they grew at the bottom of the sea. Indeed, it was said that only one tree was in existence, that its roots could not be reached in the waters by the longest line; that on the top a griffin sat as guard, which went every night to the mainland or some island to fetch an elephant for its supper. Some Dutch and English sailors declared they had actually seen the top of the tree through the clear waters. So valuable were these mysterious vegetables, from their supposed virtue in counteracting the effects of poison, that £150 was paid for a single nut. At length, a French ship touching at the Seychelle islands, discovered a number of these trees, and carried a cargo to Bombay, when there was a speedy end to the charm and its almost fabulous value.

The largest leaves, including the stalk, are about thirty feet long, and several feet broad. When the wind is strong, these mighty leaves clash together with a noise that may be heard at a great distance. We may imagine the alarm of a lonely traveller, when he hears at midnight a whole forest of these trees striking their thousands of thirty-feet leaves with the greatest violence. The tree produces

1 "Travels in Arabia Petræa." 2 Lodoicea seychellarum.

only one leaf each year, and in most cases only a single flower appears at a time. This is another of the trees which are of the highest value to the people on whose lands they thrive. Food, oil, medicine, bowls, pots, posts, thatch for houses, hats, bonnets, and numerous other things, are obtained from its different parts. The leaves are so firmly attached to the trunk, and are so strong in themselves, that a man may be seated on the end of one of them, and rock to and fro in perfect safety.

Strange as it may seem to a careless observer, a large class of canes belongs to the palm tribe. These are the *Rattans*, or *Calamus Palms*.[1] They grow in a long, rope-like, elegant manner, and entwine round the trunks of smaller trees, hanging in festoons from bough to bough. To enable them to do this, they are furnished with strong hooks, which take a firm hold of every object near them. These plants are the more graceful from their lovely foliage. Sometimes they bind together, like so many strong cables, a whole forest, and make it impassable to man. A single stem has been known to reach to the extent of 1800 feet, or one third of a mile in length. One kind is used for the bottom of chairs, and to thatch the roofs of houses; others are of value for various purposes. About seven millions of canes from these plants are annually imported into England.

We take leave of this wonderful tribe of the vegetable kingdom in the words of the Bishop of Victoria, who, on his travels in the East, came to a region where these trees extensively flourished. He remarks—"The beautiful palm, vegetating in the midst of barrenness, and deriving nourishment from the secret springs below, is a fine illustration of

[1] Calamus rotang.

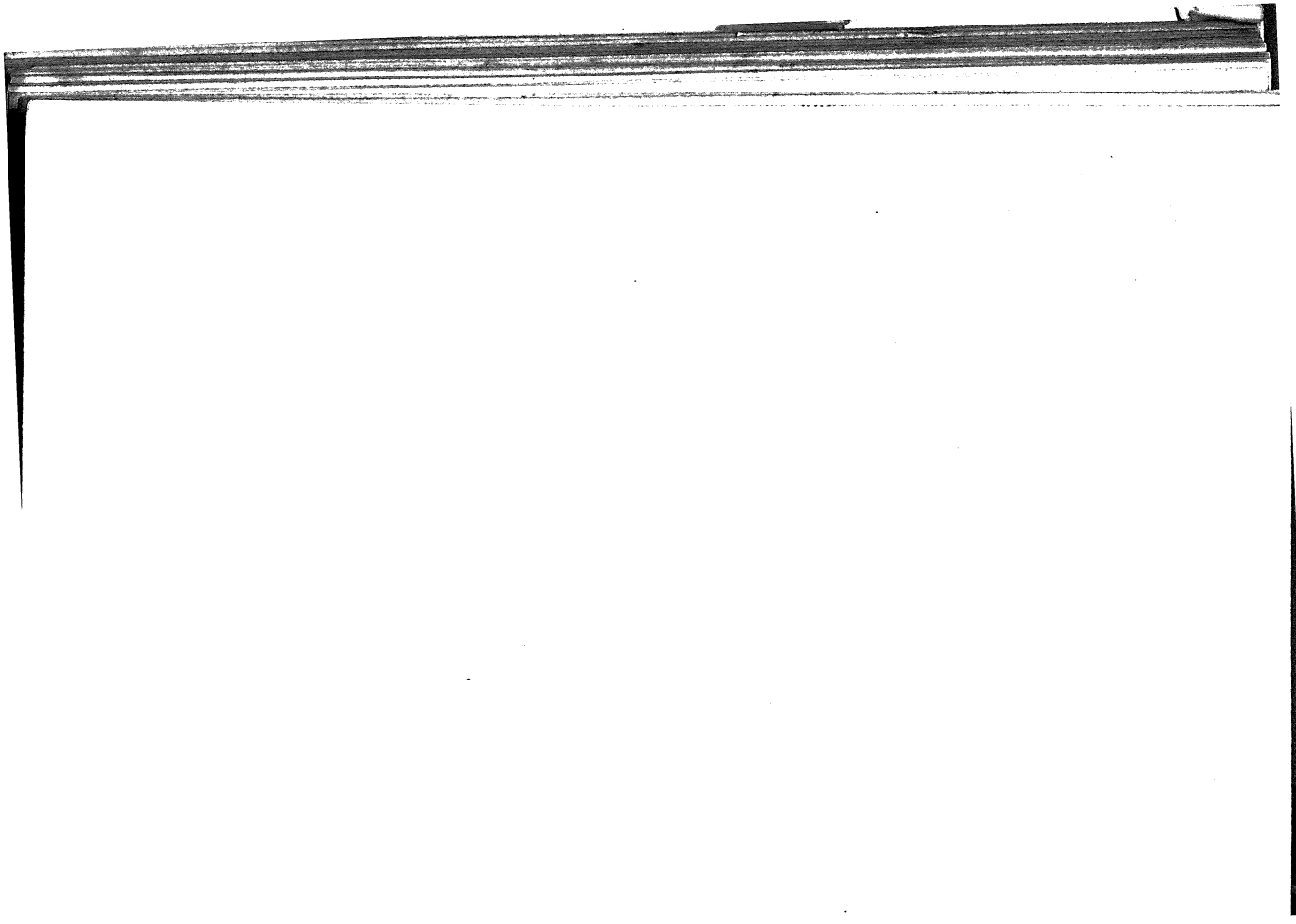
the Christian bringing forth the fruits of holiness in this world's wilderness, and having his soul sustained and strengthened by the secret supplies of Divine grace. The Tamil version of the Bible has taken advantage of the illustration in the rendering of Psalm xcii. 12: 'The righteous shall flourish like the *palmyra* tree.'"



V.

The Conservatory.

Thus sits enthron'd, in vegetable pride,
Imperial Kew, by Thames's glittering side ;
Obedient sails, from realms afar, now bring
For her the trees and plants of lovely spring.



THE CONSERVATORY.

Gum Dragon Tree—Caffre Bread Tree—Papyrus—Zebra Plant—Strelitz Queen—Strelitzia Augusta—Traveller's Friend—Tree Fern—Pitcher Plant—Side-saddle Flower—Poison Tree—Euphorbia Grandidens—Upas—Dumb Cane—Jatropha Urens—Poison Nut—Cannon-ball Tree—Pistol Plant—Sandbox Tree—Whistling-Jack-in-the-Box—Pot Tree—Fly-trap—Dancing Plant—Sensitive Plant—Stylidium—How-d'ye-do Plant—Sentinel Plant—Bottle Gourd—Calabash Tree—Brownea—Caricature Plant—Butterfly Plant—Hand Plant—Carrion Plant—Thrinex Excelsa—Cycas Revoluta—Pucha-pat—Aristolechia Gigas—King Plant—Lace-Bark Plant—Dorstenia—Long-leaved Archer—American Aloe—Nutmeg—Mace—Clove—Allspice—Cinnamon—Ginger—Arrowroot—Mahinot, or Tapioca—Pepper—Chocolate—Coffee—The Museum—A Vegetable Breakfast, etc.

THE cultivation of Botany as a science, no longer a dry study, is much encouraged by the facilities afforded by the collection of trees, plants, and flowers in the conservatories of Kew Gardens. From the days of Captain Cook to the present time, the most enterprising travellers have brought from foreign lands specimens of all kinds of curious objects in the vegetable kingdom, and have sent them to this grand depository. Some of the seeds and slips have grown into lofty trees, and now bear flowers and fruits, which were never before known in England. Here they flourish in their brightest green, even in the cold months of December and January, making the place the gayest of winter gardens.

Or, as it has been said, "It is in itself a beautiful garden *without a winter;* for you may step from one hothouse to another, and from climate to climate, of varying degrees of warmth, for hours together, even to catch a bare glimpse of its treasures." When the trees of the open country around are stripped of all their leaves, and their branches appear desolate and dead, then all within these houses are as fresh and lovely as in the month of June.

We have already surveyed the curious vegetable objects which chiefly fill the splendid Palm House. Let us now, in our second visit to these gardens, pass among the nurseries, greenhouses, hothouses, ferneries, and museums, as fancy may choose, or as the different objects invite our notice.

As we go along, we will not merely look, we will linger awhile over the objects, and inquire about their growth and produce, their likenesses and differences, their value and use. If we do not try to understand these things, in their nature and design, we are not likely to find much pleasure in a visit to Kew Gardens. The plants there will be no more to us than other plants. We may walk over the lawns, and pass through the conservatories, and come away without being the wiser for our visit. The best way to profit is to get some knowledge in our minds before we go there. Then, when we see a number of trees and plants—whether they be palms or banyans, pitcher plants or water lilies—we shall be pleased with what we behold, and recall to mind some useful information we have obtained.

The first curious object to which we will direct our attention is the *Gum Dragon tree.*[1] Observe its naked stem and sword-shaped leaves. A celebrated tree of this kind, growing in the island of Teneriffe, is supposed to be more than

[1] Dracæna draco.

four thousand years old, and to be one of the oldest trees in the world. From accounts given of it four hundred years ago, it looked then the same ancient tree as it does now. It is forty-five feet round the trunk; and though so venerable, it still bears flowers and fruit every year. The specimens in Kew Gardens are tall plants, with a tuft of spiky leaves at the top. Trees of this family yield a blood-red resin, commonly called "dragon's blood," now used by

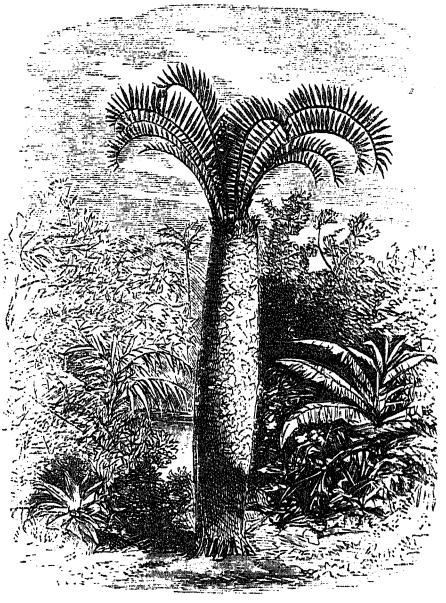


THE GUM DRAGON TREE.

painters as a varnish, and formerly by chemists as a medicine. The ripe fruit is shaken in bags to rub off the crimson resin which adheres to it, which is made up into pieces about the size of a bean, and sold to the merchants.

Look at those tapering, dark, odd-looking trunks of the

Caffre-bread tree.[1] They seem so much like old burnt posts that, were it not for the tufts of foliage which crown them, we might scarcely regard them as pieces of living vegetation. They are from the land of the Caffres in South Africa,



CAFFRE BREAD TREE.

who from the pith, which possesses the character and flavour of sago, make a kind of bread.

Near to this strange tree is the *Papyrus*,[2] a bulrush from Egypt, which rises to the height of fifteen feet. Of it the ark of Moses is believed to have been formed; and pro-

[1] Encephalartos caffer. [2] Papyrus antiquorum.

bably among it, as it grew on the banks of the Nile, he was laid. Its white pith was cut into thin slices, and made into books—hence we have obtained the name *paper* for our writing material, though the nature of the thing is quite different. The people of Egypt used to chew it for the pleasant juice it contained, and its stalks were eaten as a table vegetable. The stems also afforded material for cables,



THE PAPYRUS.

while the leaves were employed, as they are still, for making canoes or small boats. It was called by the Greeks *byblos*, from which, it is thought, we derived the word "book." Some of the sheets of papyrus used for books were more

and waved her silver style,
The storied pyramid, the laurel'd bust,
The trophied arch, had crumbled into dust;
The sacred symbol, and the epic song,
(Unknown the character, forgot the tongue,)
With each unconquer'd chief, or sainted maid,
Sunk undistinguished in oblivion's shade.
Sad o'er the scattered ruins Genius sigh'd,
And infant Arts had learn'd to lisp, and died.
Till to astonish'd realms PAPYRA taught
To paint in mimic colours sound and thought,
With Wisdom's voice to print the page sublime,
And mark in adamant the steps of Time.

Botanical Garden.

The broad flags of the papyrus, however, no longer wave over the waters of Egypt; the prophet's words are fulfilled: "The paper reeds by the brooks, by the mouth of the brooks, and everything sown by the brooks, shall wither, be driven away, and be no more;"[1] thus supplying a remarkable instance of the minute fulfilment of Divine prophecy.

Our attention is now called to the *Zebra plant*,[2] which appears to grow out of a large earthen pot in separate stems. Observe its large, broad, oval leaves. It may well be called zebra, for the stripes on the foliage remind us of the skin of that animal. The leaves are of various shades, and look as smooth as velvet. The plant produces clusters of purple flowers, but are hidden by the leaves.

[1] Isa. xix. 7.

[2] Calathea zebrina.

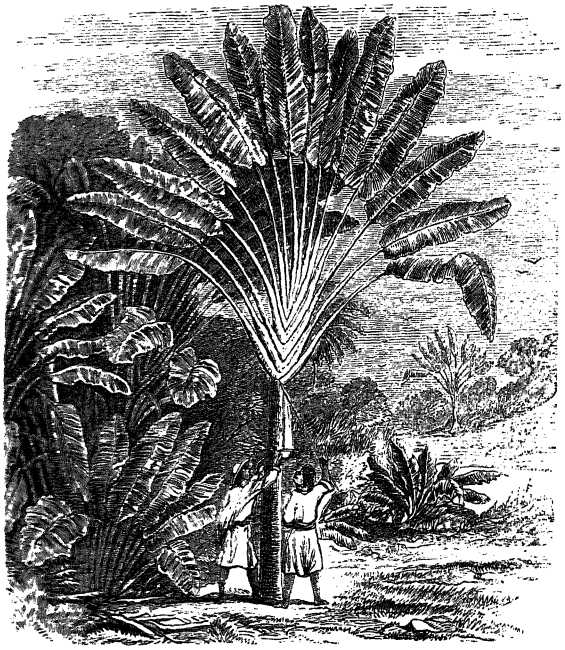
Not far from this plant is the *Strelitz Queen*,[1] so called in honour of the queen of George the Third, who was a princess of Mecklenburg Strelitz in Germany, and who took a lively interest in these gardens when they were much smaller than they are now. This plant grows in bunches in a similar manner to flags, separating into stems with a leaf at the end. The flower is of a brilliant amber or dark-orange colour. The *Strelitzia Augusta*, so called after the princess Augusta, however, is a finer-looking plant, with gloriously coloured petals. These are said to be "among the most brilliantly coloured flowers in nature."

In yonder corner is the *Traveller's Friend*[2] from Madagascar. It differs from most other trees in having all its branches in one plane; that is, like the sticks of a fan or the feathers of a peacock's tail. At the extremity of each branch grows a broad double leaf, several feet in length, which spreads out very gracefully. Under these leaves, after sunset, a copious deposit of pure dew is found, which soon collects into drops, forms little streams, which run down the branches. Here the water is received into hollow spaces, of large size, one of which is found at the root of every branch. These branches lie one over another, and when a knife, or a flat piece of stick—for it is not necessary to cut the tree—is inserted between the parts which overlap, and slightly drawn to one side, so as to cause an opening, a stream of water flows out as from a tiny fountain. Hence the appropriate name of the tree. "They yield," says Mr. Backhouse,[3] "a copious supply of water, very grateful to the traveller. Probably the water may originate in the condensation of dew, and be collected and

1 Strelitzia regina. 2 Urania speciosa.
3 "Visit to the Mauritius."

retained by the peculiar structure of the leaf: it has a slight taste of the tree, but is not disagreeable."

This tree may, with propriety, be also called the *Builder's tree*, as well as the "Traveller's tree." In Madagascar its leaves form the thatch of all the houses on the eastern side



THE TRAVELLER'S FRIEND.

of the island. The stem of its leaves are made into partitions, and often sides of the houses; and the hard outside bark is stripped from the inner and soft part, and, having been beaten out flat, is laid for flooring. The leaf, when

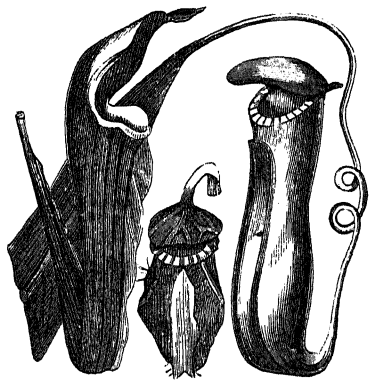


TREE FERN.

and plates at meals: and, folded into certain forms, is used instead of spoons and drinking vessels.

One of the many beautiful objects to be seen in Kew

conservatories is the *Tree Fern.*[1] It is a native of Jamaica, where it is found in the wood, and of other islands. Species of fern trees are also met with in South America and the East Indies. Those who have only seen the small ferns of our land would be struck with the lofty tree-ferns, varying from fifteen to forty feet in height. Baron Humboldt describes the admiration which filled his mind as he stood beneath the ample shade of one of these graceful objects. A crown of curled leaves, or fronds, rise in tufts at the top. The specimens found in Kew conservatories are small compared with the lofty trees in their native woods.



PITCHER PLANTS.

In one of the smaller conservatories we shall find a most curious little object—the *Pitcher plant.*[2] It is a native of marshy places in China, the East Indies, and other warm countries. The leaves are really pitchers, and are furnished with lids, which move on a hinge. These lids are wide open when the weather is moist, and shut up quite close when it is dry. In each of these tankards is generally

1 Cyathea arborea. 2 Nepenthes distillatoria.

rather more than half a pint of water, which is not received from the summer shower or from without, but is distilled from within the plant itself. When full of water the pitcher might turn over from its weight, and the contents be spilled. But to prevent this there is a little hook at the back of the lid, which catches hold of any stem that may be nigh at hand, and which keeps the pitcher erect. When the birds want water, they come to this plant, lift up the cover with their beaks, and freely help themselves. The water in the young cups is clear, but it soon becomes tainted by dead insects, that have been lured into the pitcher as into a trap, from whence they were not able to get out. Hence they have been called "living sepulchres."

The Chinese call this plant the "pig-basket," because it is like the baskets in which they carry their pigs for sale. And the people of Ceylon name it the "monkey-cup," and say that when the monkeys are thirsty, they refresh themselves with its water.

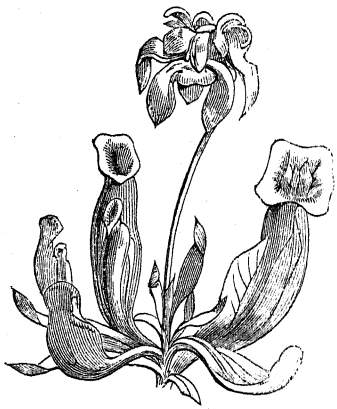


AUSTRALIAN PITCHER PLANT.

Another similar plant to be seen at Kew is the *Australian Pitcher plant*.[1] It is a very beautiful little object. Its

[1] Cephalotus follicularis.

pitchers are at the bottom of the principal stem of the plant.



SIDE-SADDLE PLANT.

America, also, has a plant of the kind—the *Side-saddle flower*,[1] whose leaves form a kind of jug, containing water. Around the mouth of the tube are inserted hairs, which help the insects in their descent, but which prevent their return, so that they fall into the water, and perish.

In contrast with these plants stands the *Poison tree*[2] of Madagascar. It resembles a plum tree, but its fruit is a most deadly poison, and has been long used in the island where it grows in a superstitious rite for the detection of crime. The wood of the tree is hard, its flowers small, and leaves thick. Its fruit, which is like a nutmeg, yields the poison. One piece of the nut, not larger than an almond, is said to be sufficient to kill twenty persons.

The way it is used is as follows:—A person suspected of any crime is compelled to eat as much boiled rice as possible, then to swallow, without chewing, three pieces of the skin of a fowl employed for that purpose. He is next required to drink the test, a quantity of scraped or bruized Tanghien nut, mixed with the juice of Bananas. The Panozondoha (denouncer of the curse), then placing his hand on the head of the accused, pronounces the

[1] Sarracenia.

[2] Tanghinia venenata.

formula of imprecation, invoking all direful curses on him if guilty. Soon after this, large quantities of rice-water are given, till the stomach rejects its contents; when, if the three pieces of skin are found, all is well, the party is pronounced "madio," or clean, legally and morally innocent of the charge; but if they are not found, he is considered guilty of the crime in question. Sometimes the corrosive nature of the poison acts with such rapidity, that life is destroyed before the ordeal is completed. Should the test be supposed to prove the guilt of the party, and yet the Tanghien itself have not produced immediate death, the accused is generally killed by the bystanders; a club, a spear, or the rice-pestle, is used as the murderous weapon, and the brains of the unhappy being are dashed out on the spot. Sometimes the victim is strangled; in other cases he is hurried away, and buried before life is extinct. In some cases the guilty are left to perish in excruciating agonies, deserted by every one. Many Christian converts have been subjected to this cruel usage, and have proved "faithful unto death." Rather than renounce their hope in Christ, they have fallen victims to the abominable *tanghien;* "not accepting deliverance, that they might obtain a better inheritance."

Another tree is now before us, whose juices are poisonous; it is the *Euphorbia grandidens:* a very noble-looking tree, with a tall, stout stem, and branches spreading out at top like a beautiful candelabrum or chandelier. The bark of the tree yields a milky juice; but, tempting as this milk looks to the eye, it is a very strong poison, in which the savage Africans dip their spears and arrows, to make the wounds they inflict more dangerous to the lives of their foes.

And here, in the conservatory, is the celebrated *Upas tree*[1] of Java. The word "upas" in the native language means "vegetable poison."

Dr. Darwin in the following lines refers to this tree agreeably to the descriptions of early travellers, which, however, have been proved to be fabulous.

> Where seas of glass with gay reflections smile,
> Round the green coasts of Java's palmy isle,
> A spacious plain extends its upland scene,
> Rocks rise on rocks, and fountains gush between;
> Soft breathes the breeze, eternal summers reign,
> And showers prolific bless the soil—in vain!
> No spicy nutmeg scents the vernal gales,
> No towering plantain shades the mid-day vales!
> No grassy mantle hides the sable hills;
> No flowery chaplet crowns the trickling rills;
> No step retreating, on the sand impressed,
> Invites the visit of a second guest;
> Fierce in dread silence, on the blasted heath
> Fell Upas sits.

The first accounts of this singular plant were, that no living creature could approach within fourteen miles of it without falling a victim to the poisonous vapour it exhaled; and that not the smallest tuft of grass would grow within a compass of many miles. To add to the dismal story, it was further stated, that the ground was strewed with the bleached bones of men and beasts who had incautiously come within its fatal range. As the king of Java used this kind of poison in warfare, it was necessary for some one to obtain it. To this dangerous service, it was said, a criminal condemned to death was sent, with a leather hood covering his head, face, and breast. A small silver box was given to him; and if he could fill it with the juicy venom, and return in safety,

[1] Antiaris toxicaria.

he was at once set at liberty. All this, however, is now known to be a fable. The real upas tree grows in a forest without hurting other trees, and persons may gather its milky poison without any injury to life or health; though if a small portion be drunk it will shortly end fatally. In its own land the tree grows to the height of eighty feet, and its bark is made by the Javans into strong ropes and coarse clothing.

In one of the conservatories may also be found the *Dumb Cane*,[1] of the West Indies, which, if a person applies it to his mouth, will cause his tongue to swell to such a degree, as to prevent the power of speech—hence the name of the plant. In former days it was cruelly applied to the lips of black slaves as a punishment. Though called a "cane," it is more of the arum order. "Few productions, however," it has been said, "are without some use, and even the dumb cane is found to be of service. Its juice is employed in the boiling of sugar, to bring it to a good grain when it is too viscid, and cannot be made to granulate properly by the application of lime alone."[2]

Another of the class of poison trees, called *Jatropha Urens*, is no longer to be found here. A plant of this kind nearly killed a gentleman engaged in charge of the gardens. As he was leaning over it, to reach another object, some of its fine bristly stings touched his wrist; he was heard to cry, "Run for the doctor," and in a few minutes was laid down insensible. But we are happy to record that he was restored, though with some difficulty. The plant is now dead, which is not to be regretted, for the sake of those

1 Dieffenbachia seguina. 2 "Wanderings at Kew."

young visitors whose little fingers too often do what is forbidden; that is, to touch the trees and flowers.

Let us glance again at a poisonous tree to be found in one of the small conservatories at Kew: it is the *Poison Nut*,[1] or *Nux Vomica*. The shrub abounds on the coast of Malabar; the flowers are greenish white, and the fruit, which is of the size of an orange, contains a white pulp, in which are embedded round, flat seeds. From the seeds is obtained an alkali, or salt, which is so active a poison, that a very few grains will kill a dog, and a small quantity will destroy the life of a man. But in the skilful hands of a physician, the poisonous principle known as strychnine is turned to the most useful account in the cure of disease.

There are many questions as to the operations of nature which we are unable to comprehend. Among these is the purpose to be accomplished in all cases by the poisonous qualities of plants. Some of these poisons have been employed for medical purposes, as we have just seen in the case of nux vomica, others are used for the benefit of man. Of the rest we may be assured that they have not been created in vain, and that all have a place, wisely and beneficently appointed in the arrangements of Divine providence. Our knowledge of vegetable life is at present very partial. Discoveries will doubtless be made in the future which will make plain many things that are now obscure and mysterious.

We pass to the consideration of other curiosities. And here is one—the *Cannon-ball tree*,[2] a native of Guinea, which grows to the height of sixty feet. Its flowers are as remarkable for their beauty and fragrance as its fruit for its size.

1 Strychnos nux-vomica. 2 Couroupita guineansis.

The blossoms are of delicious crimson, appearing in large bunches, and exhaling a rich perfume. The fruit resembles large cannon-balls. On the coasts of Guinea the silence is often broken by a violent hurricane of wind; at such a time you may hear the report of the cannon-ball tree, whose bursting produces an oft-repeated echo, resembling the rolling fire of a discharge of artillery. From the shells are made bowls and pots, and the contents yield gum, sugar, and several kinds of acid.

Of a similar explosive character is the *Pistol plant*.[1] When near flowering, and with its tiny buds ready to open, if the plant is either dipped in water, or abundantly watered, each bud will explode successively, like a mimic bombardment, sending forth a little cloud of dusty pollen as a puff of smoke, whilst its stamens suddenly start forth, and form a cross.

Another plant is known as "*Whistling-Jack-in-the-Box*,"[2] from the whistling noise produced when shaken by the breeze. A valley in Barbadoes, where many of these plants grow, is called "Whistling-Jack-in-the-box Valley."[3]

The capsules of the *Sand-box tree*[4] explode as loud as a musket when scattering its contents, which thus summon the monkeys from every quarter of the forest to the feast. Hence the name has been given to the plant of "the monkey's dinner bell;" there is thus not only a feast provided, but a summons to come to it. "In one case," it has been said, "the force of an explosion was so great as to blow out a window."

1 Pilea allitrichoides. 2 Hernandia sonora.
3 "Economy of Vegetation. By a Fellow of the Linnean Society."
4 Hura crepitans.

A similar feast for the monkeys is made by the *Pot-tree.*[1] The seed is like an old rusty iron pot with a lid. As soon as the kernels are ripe, the pot, or seed-vessel, is turned upside down, the lid falls off, and the nuts are scattered on the ground, and there is a fierce scramble with parrots, parroquets, monkeys, and other creatures of the forest, who shriek and chatter as they revel at their feast. Those who have witnessed the scene describe it as singularly droll.

An important end secured by the explosive nature of different plants is the scattering of the seed so that it may take root on other spots, and thus diffuse vegetation around. In one instance a plant casts forth its seed as from a boy's popgun to the distance of fifty feet.

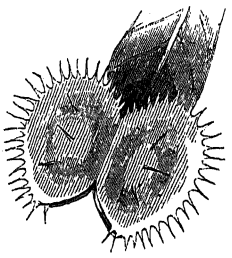


FLY-TRAP.

We direct our way into a small conservatory, that we may glance at the *Fly-trap.*[2] Its singularity arises from the curious modification of the leaf, which forms an insect-catching trap. "Certain of the leaves are fringed at their

1 Lecythis ollaria. 2 Dionœa muscipula.

edges with a row of long spines, and are endowed with a power of folding the two sides of the leaf towards each other, so as to enclose anything between them which may have settled upon its surface. When thus folded, the spines cross each other in such a manner as completely to prevent the escape of an insect which may be thus captured. Upon each half of the blade of the leaf there are three projecting thorns; and it is when either of these receives the slightest touch, that the two sides fold together, and form a complete trap, the walls of which seem to press more closely upon the captive the more it struggles. Any unfortunate insect which alights upon the leaf is speedily destroyed; and its decay appears to furnish the plant with nutriment beneficial to it. Plants of this kind, which have been kept in hothouses in this country, from which insects were carefully excluded, have been observed to languish; but were restored by placing little bits of meat upon these traps—the decay of these seeming to answer the same purpose. The petioles of the leaves which form these traps are very much widened and flattened, forming leaf-like organs, which seem to perform the functions of true leaves."[1]



THORNS ON A LEAF OF THE FLYTRAP.

This remarkable irritability of some plants is seen also in the *Dancing plant*,[2] found on the banks of the Ganges, whose leaves move up and down. When one leaf has attained its lowest point an opposite leaf has reached its highest; they

[1] Dr. Carpenter's "Vegetable Physiology."

[2] Desmodium gyrans.

The best known of this class is the *Sensitive plant*,[1] or, as it was called by Browne, an old English poet, "the feeling plant," which

> Shrinks up his dainty leaves if any sand
> You throw thereon, or touch it with your hand.

It is a native of tropical climates, and flourishes in moist land. It has a large number of leaflets. If the smallest of these leaflets be touched, the effect is soon seen over the whole plant. The first two opposite leaflets begin to close, then two more in regular order, until the whole are folded up. The impulse is then conveyed to the leaf-stalk, and next to the stem, until the whole plant is closed. It is supposed that the sensitive property resides in the juice contained in two little swellings or knots found at the joint of each leaf. The way in which this sensitive property is generally shown is by cutting off a tip of one of the leaflets; and bringing the sun's rays upon it through a burning-glass, or even a knock on the ground at a short distance from the plant is sufficient to produce the influence on the leaves. A traveller in Brazil says, that the falling of a horse's feet on the road is sufficient to set a whole bed of sensitive plants in motion.

A poet thus alludes to this singular piece of vegetation—

> Weak with nice sense the chaste *Mimosa* stands,
> From each rude touch withdraws her timid hands:

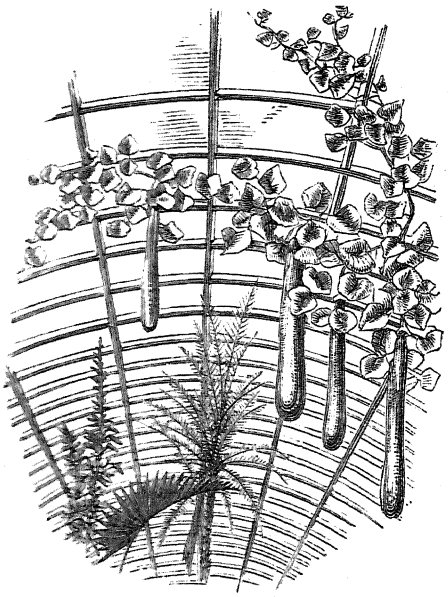
[1] Mimosa sensitiva.

There are other plants which have curious movements; as the *Stylidium*, from New Holland, which has a tall column rising from the centre of the flower, and usually hangs over on one side; but if it be touched ever so lightly it starts up with a jerk, and rapidly swings over to the opposite side, as though offended at the liberty taken with it.

De Candolle informs us of another specimen somewhat resembling the Sensitive plant in its irritability of movement. It is a native of Senegal, and is called by the inhabitants the '*How-d'ye-do plant*,' because, when touched, its leaves bow down as if about to salute those who touch them. He also relates another equally singular instance in a plant, a native of Dominica, and called, from its peculiar movements, the *Sentinel plant*. While all the other leaves are bent down, one is sure to be found erect, as if on the look out for an enemy. After a certain time this leaf comes off guard, and then another rises up and becomes sentinel, and so on through the entire plant.

Some of the flowers of the orchid tribe display movements equally interesting. Thus, we read of one discovered by Mr. Drummond, growing in the Swan River Colony, the flowers of which form a perfect insect-trap in the form of a box with a moveable lid. The poor flutterer, enticed by the odour and lustre of the flower, greedily plunges into its painted dungeon, and that instant is locked up safely by the lid dropping upon it. By-and-by, however, the flower seems

purpose to which it is turned at once adapts it to be

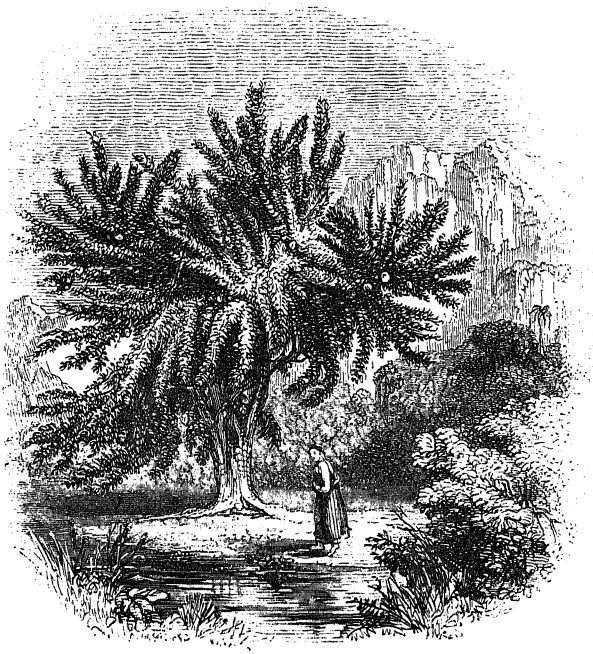


THE BOTTLE-GOURD.

used as a bottle or flask. It grows to the length of six feet, and is often a foot and a half round the thick part of the bulb. When young it is used for a spoon; when fully grown and ripe the Arabians make of it either a pickle or a

[1] "Life of a Tree."

[2] Lagenaria vulgaris.



THE CALABASH TREE.

fruit is sometimes three feet round the centre; at other times not larger than six inches. It is either bottle-shaped,

[1] Crescentia cujete.

or round like a large melon. Inside is a large number of flat seeds, which are removed, and the hard shell is then used for various purposes, as bowls, cups, and bottles. Some will hold a gallon, and so well stand the fire that water may be boiled in them. The wood of the tree is very tough, and is manufactured into articles of furniture. The wild natives of America engrave the most fantastic figures on the outer surface of these shells.

There is a tree in the West Indies called *Brownea* after the naturalist Dr. Browne, who first particularly described it, possessing great sensitiveness in its leaves, which is designed as a protection to its fine blossoms. "Every evening," says an observer, "the leaves rose up and lifted themselves from the blossoms to expose them to the dew, so that each morning these beautiful objects were uncovered; but as day advanced, the leaves gradually drooped, and bent down over the flowers to guard them from the rays of the sun. Who can imagine the gorgeousness of an equinoctial forest at midnight, with the veils thus lifted off myriads of flowers of every form and hue, which are hidden from our gaze, in this or other ways, during the hours of a tropical sunlit day, whose brilliancy would be death to their tender texture and delicate colours!"[1] Specimens of this tree are to be seen in Kew conservatories.

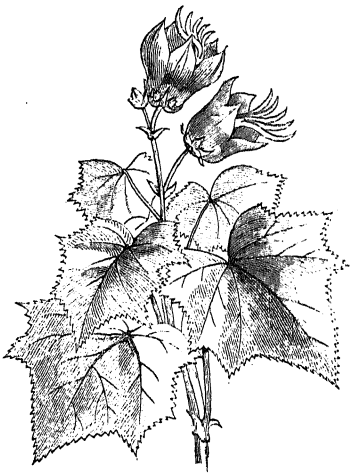
We pass on to the *Caricature plant*,[2] the leaves of which are like those of a green bay tree, but are marked in the middle with yellowish spots. If you look carefully at these spots, you may imagine that the portrait of some one you well know, or even a picture of yourself, is plainly to be traced thereon.

1 Lindley's "Botanical Register." 2 Graptophyllum hortense.

This will introduce us to a number of strange imitations or resemblances to living objects.

As, for instance, the *Butterfly plant*,[1] from the West Indies. It throws out to a short distance its brown and yellow flowers; these move to and fro, and appear like butterflies on the wing. Even on a closer look there appear the head, body, legs, and wings of a perfect insect.

The flowers of another represent the body of a *swan* with outstretched wings.[2] Within the blossom of a third[3] appears a remarkable resemblance of the head of a *dove*, with purple spotted wings. A fourth[4] has the appearance of an *ape* with long arms stretched before him. Others look like caterpillars, flies, and moths.



THE HAND PLANT.

From Mexico has come the *Hand plant*,[5] where it is called "the tree of little hands," because its beautiful small flowers, have some resemblance to the fingers of a child's hand. Over these flowers in the land from whence the plant is brought, hosts of lovely humming birds delight to flutter.

On yonder stand is the *Carrion plant*,[6] from South Africa, which emits an unpleasant odour, though it is said to be as

1 Oncidium papilis. 2 Cycnoches ventricosum. 3 Peristeria elata.
4 Sobralia pendrula. 5 Cheirostemon platanoides. 6 Stapelia.

acceptable to the Hottentot as the fragrance of roses is to the toilet of an English lady. It is not dissimilar to the plants of the cactus tribe. The flowers are like little star-fishes. We are told that the smell and appearance of the leafless stems attract flies, which lay their eggs on what seems to them putrid flesh. When the young are hatched, they find nothing on which to feed, and die in great numbers. It has been observed that this is among the many plans designed by the great Creator to keep insect-life within certain bounds.

It is impossible to describe all the singular productions to be seen in the conservatories at Kew. In passing, notice the *Thrinex Excelsa*, whose mighty leaves may be compared to shields, with long two-edged swords attached. And there is the *Cycas Revoluta*, whose leaves are like large pens; the *Pucha-pat* of India, yielding a valuable perfume; the *Aristolechia Gigas*, entwining around the column supporting the building, whose helmet-shaped leaves, when fully grown, are worn by the children of the Indians as hats.

The *King plant*,[1] too, from Ceylon, must not be overlooked. Its leaves are like brownish-green velvet, covered with a delicate network of gold. It is a right royal piece of vegetation.

Now turn to the *Lace-bark tree*,[2] from Jamaica, whose inner bark resembles the finest kind of lace. Indeed, like that commodity, it is used to ornament a dress. A pair of ruffles and a cravat were made of this natural lace, and presented to king Charles II. The negro maidens, also, have been known to make gowns and petticoats of it for festive

1 Anœctochilus setaceus. 2 Lagetta lintearia.

occasions; but in the days of slavery it was, to their sorrow, plaited into whips for their backs.

That small plant in a pot labelled *Dorstenia* is thus described by a botanist:—"It is something like a flat piece of green leather, growing at the end of a flower-stalk, and is, in fact, a flat and open receptacle of minute flowers. Roll it up with the flowers outside, and it is bread-fruit; with them inside, it is a fig." It might be called fruit-cake, and was formerly supposed to be an antidote to all poison.

We must just glance at the *Long-leafed Archer*,[1] a plant from the West Indies. It has a dark green, velvet-looking, arrow-headed shaped leaf, which has suggested its name. In hot countries it is a water plant, and is remarkable for the beauty of its flowers. One species of this plant grows in eastern Europe, and its fruit is eaten by the Calmuc Tartars.

In one of the stoves, or small conservatories, at Kew, we shall find specimens of the *American Aloe*,[2] which blossoms only in a long period of years, though not, as it is sometimes ignorantly affirmed, once in a hundred years. It throws up a flower stem from twenty to twenty-four feet in height. One species from Mexico has huge, sword-shaped, thick, and fleshy leaves: each of these leaves averages twelve pounds in weight. Two ancient specimens of another and not smaller sort blossomed here some years since, and attracted much attention. It was known as the *Fourcroya gigantea*, a name given in compliment to the French chemist, Fourcroy. The two plants in question had been in the Royal Gardens, first of Hampton Court and then of Kew, pro-

1 Sagittaria longifolia. 2 Agave Americana.

bably from the earliest introduction of the species into Europe, in 1731. "On one and the same day, in the summer of 1844, each was seen to produce a flowering-stem, which resembled a gigantic head of asparagus, and grew at first at the astonishing rate of two feet in the twenty-four hours. So precisely did the twin plants keep pace with each



THE AMERICAN ALOE.

other, that at the very time it was found necessary to make an aperture in the glass roof of the house for the emission of one panicle of flowers (twenty-six feet from the ground), a similar release was needed by the other. The rate of

growth then most sensibly diminished; still, in two months, the flower-stalks had attained a height of thirty-six feet! The flowers were innumerable on the great panicles: they produced no seed, but were succeeded by thousands of young plants, springing from the topmost branches; and these continued growing while attached to the stem for a long while after the death of the parent-plants, both of which perished, apparently from exhaustion."[1]

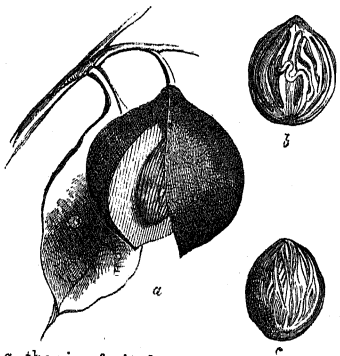
The native Mexicans make paper, rope, and twine out of the fibre of this tree, and obtain a sugary syrup from the stems, and an oily juice from the leaves which they use as soap. Baron Humboldt saw a bridge in South America, 131 feet in span, of which the main ropes were made of this fibre.

The *Aloe tree* of Scripture is another species,[2] about ten feet high. The Jews say it flourished in the garden of Eden, and hence they call it "the tree of Paradise." It was used for perfuming clothes, and was regarded as one of the chief spices.[3]

We next invite attention to the numerous valuable plants, from which we obtain our spices. Though not remarkable for beauty to the eye, they are adapted to gratify the palate. They are largely used as condiments, to give a relish and flavour to our food. "They are all aromatic plants, and exceedingly uniform in their properties. They contain essential oil in abundance, which imparts a peculiar, strong, and penetrating odour, and a warm and pleasant taste; hence they yield some of our most grateful stimulants and spices."[4]

1 "Kew Gardens." By Sir W. Hooker.
2 Aloe vulgare.
3 Psa. xlv. 8; Sol. Song iv. 14.
4 Main's "Hortus Dietetica."

We first direct our attention to the *Nutmeg tree*,[1] one of the laurel tribe. It is a native of the Molucca islands. A nutmeg plantation has the trees planted in rows. The leaf is dark green and glossy; and the fruit, at a little distance, might be taken for a small russet apple. When ripe, the thick husk splits in the centre, showing a scarlet network of *Mace*, inclosing an inner nut, which is the nutmeg. The tree with its ripe fruit yields a most delicious odour. The nut is gathered three times in the year.



a, the ripe fruit, burst. *b*, the Mace. *c*, Nutmeg alone.

The *Clove*[2] is an evergreen, and its flowers are very much like the blossoms of the myrtle. It is a native of the Moluccas, or Spice Islands; and is also cultivated in nearly every part of the East and West Indies. It has broad, shining leaves, and is generally about twenty feet high. The unopened flower-buds form, when dried, the cloves of commerce. The name is derived from the French *clou*, a nail, from the shape of the flower-bud. The oil of cloves is employed as a medicine, and the spice is much used in cookery.

"Clove trees," says Sir T. Raffles, "as an avenue to a residence, are perhaps unrivalled; their noble height, the beauty of their form, the luxuriance of their foliage, and,

[1] Myristica officinalis.

[2] Caryophyllus aromaticus.

above all, the spicy fragrance with which they perfume the air, produce, on driving through a long line of them, a degree of exquisite pleasure, only to be enjoyed in the clear light atmosphere of these latitudes."

Pimento, or *Allspice trees*,[1] are largely cultivated in Jamaica. The spice consists of the berries, which are plucked when in a green state, before they ripen into hardness. The pimento tree rises very stately, with a fine glossy foliage, and in its blossoming season is studded with myriads of star-like white blossoms. A park of these trees, around which multitudes of beautiful-plumaged birds love to hover, is described as a charming scene.

We now come to the *Cinnamon tree*,[2] whose bark yields the spice so named. It grows in India, but specially flourishes in the island of Ceylon. Bishop Heber, in his "Journal," writes—"In the afternoon we drove through the far-famed cinnamon gardens, which cover upwards of 17,000 acres of land on the coast, the largest of which are near Colombo. The plant thrives best in a poor, sandy soil, in a damp atmosphere: it grows wild in the woods to the size of a large apple tree; but when cultivated is never allowed to grow more than ten or twelve feet in height, each plant standing separate. The leaf is something like that of the laurel in shape, but of a lighter colour: when it first shoots out it is red, and changes gradually to green. It is now out of blossom; but I am told that the flower is white, and appears, when in full bloom, to cover the garden. After hearing so much of the spicy gales from the island, I was much disappointed at not being able to discover any scent, at least from the plants, in passing through the gardens; there is a very fragrant-smelling flower growing under them, which at

1 Eugenia pimenta. 2 Laurus cinnamomum.

first led us into the belief that we smelt the cinnamon, but we were soon undeceived. On pulling off a leaf or a twig, one perceives the spicy odour very strongly; but I was surprised to hear that the flower has little or none. As cinnamon forms the only considerable export in Ceylon, it is of course preserved with great care. By the old Dutch law, the penalty for cutting a branch was no less than the loss of a hand; at present, a fine expiates the same offence. The neighbourhood of Colombo is particularly favourable to its growth, being well sheltered, with a high equable temperature; and, as showers fall very frequently, though a whole day's heavy rain is uncommon, the ground is never parched. The manager of the cinnamon gardens good-naturedly sent some of the cinnamon-peelers to our bungalows, that we might see the way in which the spice is prepared. They brought with them branches of about three feet in length, of which they scraped off the bark with knives, and then, with a peculiar shaped instrument, stripped off the inner rind in long slips; these are tied up in bundles, and placed to dry in the sun, and the wood is sold for fuel."



CINNAMON

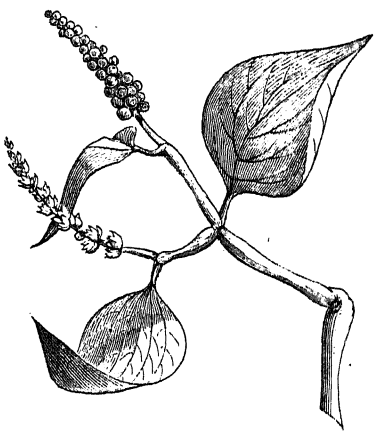
The *Ginger plant*[1] resembles a rush, and is a native of the East Indies, the Moluccas, and is cultivated in the West Indies. Its roots creep along the ground, and from the sides of them leaf and flower-stalks annually spring up. The flowers, which are of a red colour, arise from expanded scaly bodies. The root is our ginger. It is dug up when

[1] Zingiber officinale.

the leaves fade, and is dried for sale. That which is used for preserving is taken up before ripe, then scalded, steeped in water till quite tender, and afterwards put into jars and covered with a thin syrup.

Allied to this is the *Arrow-root plant*,[1] a native of South America, but now cultivated in the South Seas, West Indies, and some parts of Hindostan. It rises to the height of two or three feet, has broad pointed leaves, and is crowned by a spike of small white flowers. The Indians use the juice, which is pressed out of the root in preparing it for sale, to cure the wounds made by poisoned arrows. Hence its name, *arrow-root*. It forms a nice light food for invalids. Other species have more showy flowers, the seeds of which are so hard as to be called "Indian shot."

Look also at the *Pepper plant*,[2] from the East Indies, whose berries furnish us with the sharp-tasted spice used so commonly at our tables. More than fifty millions of pounds of pepper are gathered every year.



THE PEPPER PLANT.

Not far from this plant we find the *Manihot*,[3] from the West Indies: every part of the tree yields a strong poison,

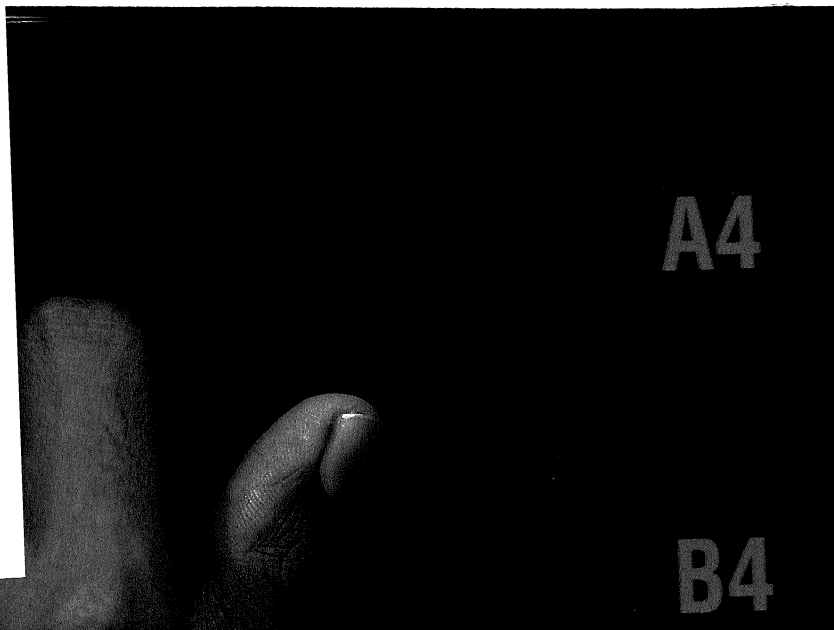
1 Maranta indica. 2 Piper nigrum. 3 Janipha manihot.

substance of which they were made was once surrounded with poison—though we need not be nervous lest we should thereby come to an untimely end.

Another plant to be observed is the *Chocolate Nut*,[1] a kind of laurel, with its stout stem, oval leaves, and nourishing nuts. The name given to it, *Theobroma cacao*, signifies "the food of gods." The capsules, or seed cases, are as large as the egg of a goose, and each contain about twenty-five seeds, or nuts. From these nuts the paste known as chocolate is made. A chocolate, or cocoa plantation, is described as a scene of much beauty and interest.

While speaking of berries the *Coffee tree*[2] must not be forgotten. Here is a specimen growing out of a piece of bare rock as it was sent from the island of Bermuda. The coffee plant is cultivated in Arabia, Abyssinia, Persia, and the East Indies. But the coffee of Arabia is the best. It grows from eight to twelve feet high, and may be distinguished by its shining leaves, like those of the bay tree, and long slender branches bending downwards. It bears a white sweet-scented flower, altogether resembling the jasmine. The berry is red like a cherry; in this are two hard oval seeds, the flat sides of which face each other. They are the coffee so extensively used in this country. More than 5,000,000 lbs. of it are annually used in Great Britain.

[1] Theobroma cacao. [2] Coffea arabica.



es being taken as a beverage, coffee is said to be useful
edicinal purposes.

l now, before we say farewell to these lovely grounds
w, let us take a peep at the MUSEUMS, with their
sing stores of curious objects. The rooms contain
selections of seeds, dried grasses, fruits, gums, roots,
ood; together with specimens of the uses to which
re applied. They are placed in glass cases, ranged
the middle of the building, and against the walls.
ne case we find a large and singular collection of pine-
from the size of boys' marbles to that of a horse's
The hard scales are the fruit of the tree, and contain
ed. Formerly cones were much used in medicine,
they are not now in repute. Just by are some
, which have been turned to good account in the
and snuff-boxes made from them. In a small glass
riety of apples of Sodom. These are a sort of galls,
ke all galls, arise from eggs laid by little flies. When
is laid in a stem or a leaf of a tree, the part swells
kind of tumour. The egg soon sends out a caterpillar,
finds a house and food within, until it eats its way out
capes as a winged insect. The outside of the gall
n the tree looks like a small red apple, but the inside
of dust. Many a thirsty traveller has been tempted
glossy and rich exterior to bite the apple, and has
is mouth, not with a refreshing fruit, but with the
and black ashes of the inside. The trees which produce
galls grow near the Dead Sea, as well as other parts;
the corrupt city of Sodom once stood on the spot, its
as been given to them. A large number of other
re in the Museum, of different shapes, sizes, and
brought from several parts of the world. From one

kind, writing-ink is made. How much are we indebted to the little creatures which make these galls on the trees and shrubs, and thus enable us to converse with our absent friends!

But if insects aid us in some things, in others they do not appear to so much advantage. Here are specimens of timber which they have filled with holes through the hardest parts. They have most strangely eaten their way, and the lines they have formed are quite a study. By the side of the wood are laid the dead bodies of the little insect depredators. The white ants of India have devoured chests of drawers, and other articles of furniture; and the planks of many a noble ship have been so destroyed by another kind of tiny insect, as to cause it to founder beneath the deep waters.

The case of gutta percha is sure to catch the eye. Here are the wood and the gum—the material just as it comes to England, and the various articles into which it is made.

In one place we see a group of skeletons of leaves—their minute and delicate forms most tastefully arranged; and in another, a variety of similar skeletons made to look as if fashioned of gold and silver, by the process of electrotyping.

As we pass our eye in a new direction, we observe fancy mats made of Irish rye-straw, by female peasants in the county of Wexford, Ireland; also wheat-straw curiously platted in twenty various ingenious ways. Cocoa-nut fibre made into brushes, mats, ropes, baskets, cloth, hats, and bonnets; with the shells of the nuts shaped into drinking-cups and pots. Teas—black, grey, and green—from Assam and China; with "brick tea," like small cheeses, from Thibet. Vases, jars, and pans, which are made from the bark of the *Pottery tree*, and may be put upon the fire without cracking, might well pass for brown earthenware.

Madder, saffron, and numerous other dye-stuffs, from

which we obtain our brightest and brilliant, as well as our more sober colours, for the use of dyers and painters, are to be found here.

Now we are tempted to gaze upon a group of articles made of vegetable ivory, from New Grenada, which for beauty rival those carved from the finest elephant's tusks. Here is the head-dress of a Tahitian lady: the band or fillet for the brows is formed of the inner bark of the *Hibiscus tree;* while from it flows the curls to spread over the shoulders, cut from the cuticle or skin of a young cocoa-nut. The whole is most delicate and graceful, and is worthy to stand by the side of a coronet of gold and diamonds.

The rice-paper in that glass-case is fashioned into a bunch of flowers; and in another, the lace bark from Jamaica and Cuba exhibit some beautiful forms. Here is a cradle of the North American Indians, made of cedar bark, the top of which compresses and flattens the head of the infant, and which may be suspended from a pole or branch of a tree, and left to be rocked to and fro by the wind. And there is a grand kava bowl, of the South Sea islands, used on great occasions for preparing the exciting beverage called kava. Now look at a model of a town cut out of cork, and now at some "robin-redbreast pincushions," and then at some wooden hats which are as light as the finest beaver.

In one place are table mats and baskets made of grass from the northern clime of Labrador; and in another, similar articles from the hot countries of the east. Cane baskets, bark canoes, mulberry-tree cloth, India-rubber shoes, and strong linen for tent coverings from a species of palm tree, claim at least a glance as we pass along the room.

Baron Humboldt, there is a tree in the South Sea Islands which produces ready-made shirts. The natives cut off pieces of the tree about two feet long, from which they draw off the fibrous bark, as boys pull off the bark of chesnuts to make whistles. Each man selects a tree near to his own breadth, so that the shirt may be a good fit. When the bark is cut off, they cut a hole in each circle to admit the arms. The shirts do not require any washing, starching, or ironing, and a more convenient article could not well be imagined. The same country produces bread-fruit, so that an idle fellow may get his clothes and bread gratis.

Here is a towel-gourd, used as wadding for guns, and also as a cloth or towel. In one place are several lumps of monkey-bread; and not far away is the coarse bread eaten by the natives of Van Diemen's Land. From China there are berries of the tallow plant, from the West Indies the seed-vessels of soap-berries, employed in those islands in washing linen, of which they are said, according to Professor Oliver, to cleanse more than sixty times their weight in soap; and from South America some of the monkey-pots with natural lids.

Pause for a moment over these specimens of the *Mustard tree*,[1] supposed by Dr. Royle to be the mustard tree of Scripture, "which indeed is the least of all seeds, but when it is grown is the greatest among herbs." Messrs. Irby

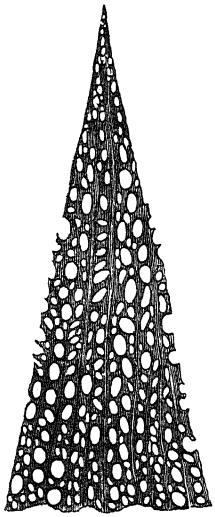
[1] Salvadora persica.

which, though at first gaining only a few adherents, would in the end spread far and wide.

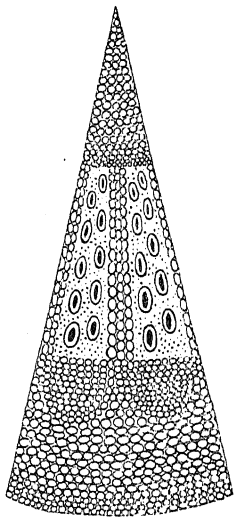
We should find no great difficulty in this place in bringing together, from many lands, the materials for a good breakfast, though some of it might be rather new to the taste. There is the bread-fruit from the South Sea Islands; and shea butter, made from the kernels of a tree that grows on the river Niger in Africa. A bottle of milk drawn from the cow tree, and a loaf of dried cream from the milk tree of Mexico. Coffee from Arabia, and beet-root sugar in cakes of the purest white; or, if we prefer it, moist sugar from the maple tree, like cakes of brown soap. And, if we wish to make the fire burn more quickly, there is in a case in the corner of the room a pair of vegetable bellows, made of the leaves of a tree from a remote part of India, and with which the natives can give blasts strong enough to melt bars of iron. Cups and saucers, plates and pots, together with a good white tablecloth, may be obtained from the different vegetable productions around us. As we are not likely, however, to sit down to such a breakfast, except in fancy, we will proceed in our inspection of the rooms.

But we cannot notice a quarter of the curious and useful productions to be seen in these Museums. Varnishes and oils, drugs and spices of all kinds; starch and gums; beans and peas, in pod and out of pod; fruits, common and rare;

corn-plants, grasses, and sea-weeds from lands east, west, north, and south; reeds, shaped into pipes and walking sticks; bamboos, formed into drinking-cups, musical instruments, and bows and arrows; several singular-looking tree-ferns from China; cotton in seed, leaf, and flower, with the yarn and cloth made from its fibres; flax in the dark thread, and by its side the fine white cambric



The Vine.



The Elm.

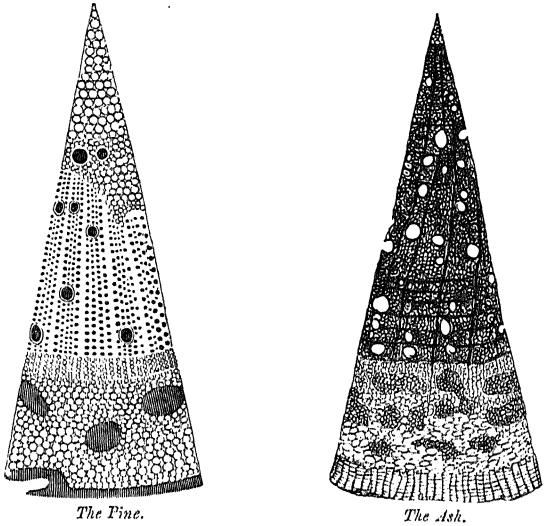
SECTIONS OF THE STEMS OF TREES,

into which it is made; hemp in the skein, and near to it the canvass and cordage into which it is fashioned—may here all be seen and admired.

We must not omit to notice the contents of a pound of potatoes, reduced into their different parts—as water, starch, charcoal, and woody fibre. Clever as it was to separate these parts, it would be a much more clever opera-

tion to put them together again. The great variety of potatoes, of dwarfs, kidneys, champions, and fifty others, placed around, will not fail to catch the eye of the visitor.

Here too, are slabs of wood—cedar, mahogany, poplar, birch, sycamore, ebony, satin-wood, bog-oak, rose, teak, pine, and walnut, and others whose names are familiar to us; with those which are not so well known, as the *Mammee*,



The Pine. *The Ash.*

SHOWING THEIR CELLULAR FORMATION.

Yaru-yaru, and *Paddle tree*. Do not pass them in haste: stop and admire their varied colours, singular texture, and exquisite grain, as seen by the unassisted eye: when surveyed with the aid of a microscope, in their beautiful cellular formations, they present new objects of wonder and admiration.

As we gaze on these singular and interesting objects, all

so orderly and picturesquely arranged, and to be seen under such favourable circumstances, "we are taught," says Professor Oliver, "to appreciate the general relations of the vegetable world to man. We learn from them the sources of the innumerable products furnished by the vegetable kingdom for our use and convenience, whether as articles of food, of construction and application in the arts, of medicine, or curiosity. They suggest new channels for our industry; they show us the variety in form and structure presented by plants, and are a means of direct instruction in most important branches of useful knowledge. We see from them the particular points upon which further information is needed, especially as to the origin of some valuable timbers, fibres, and drugs, in order to perfect our knowledge of economic botany: in brief, the Museums show us *how little*, as well as *how much*, we know of the extent to which herbs, shrubs, and trees, contribute to our necessities, comforts, and numberless requirements."

Nor must we forget that they are all the gifts of our heavenly Father, who has thus kindly provided for his creatures in every part of the earth. We have seen how wonderfully varied they are! What strange adaptations and contrivances of means to ends. How singularly suited to the circumstances and wants of the people in whose lands they are found! And how, by an interchange of commodities, is the commerce and trade of the world promoted! He has given to one land a large variety of productions, which supply food, raiment, and a thousand comforts to its inhabitants, and to another country a different order of vegetable gifts, but which are equally suitable for those on whom they are bestowed. And he has imparted to man the wisdom and power which enable him to turn them all to his service.

"The works of the Lord are great, sought out of all them that have pleasure therein. His work is honourable and glorious; and His righteousness endureth for ever. He hath made His wonderful works to be remembered."[1]

"O Lord, how manifold are thy works! in wisdom hast thou made them all: the earth is full of thy riches."[2] "For thy pleasure they are and were created."[3]

There lives and works
A soul in all things, and that soul is God.
The beauties of the wilderness are his,
That make so gay the solitary place
Where no eye sees them. And the fairer forms
That cultivation glories in are his.
He sets the bright procession on its way,
And marshals all the order of the year;
He marks the bounds which winter may not pass,
And blunts its pointed fury; in its case,
Russet and rude, folds up the tender germ
Uninjured, with inimitable art;
And ere one flowery season fades and dies,
Designs the blooming wonders of the next.
The Lord of all, himself through all diffused,
Sustains, and is the life of all that lives.
Nature is but a name for an effect
Whose cause is God. One Spirit—his
Who wore the plaited thorns with bleeding brow,
Rules universal nature! Not a flower
But shows some touch, in freckle, streak, or stain,
Of his unrivall'd pencil. He inspires
Their balmy odours, and imparts their hues,
And bathes their eyes with nectar, and includes
In grains as countless as the sea-side sands,
The forms with which he sprinkles all the earth.

1 Psa cxi. 2–4. 2 Psa. civ. 24. 3 Rev. iv. 11.

Happy who walks with him! whom what he finds
Of flavour or of scent, in fruit or flower,
Or what he views of beautiful or grand
In nature, from the broad majestic oak
To the green blade that twinkles in the sun,
Prompts with remembrance of a present God!
His presence, who made all so fair, perceived,
Makes all still fairer.

Cowper.



ALOE TREE OF SCRIPTURE.

VI.

The Orchard.

Blow soft, ye western gales; in pity guard
The tender offspring from the killing storm
Pour'd from the angry north. Teach the pear
To nurse its juicy progeny, till time
Has mellow'd its rich pulp to the pleased taste.
Let the plum hang unruffled on its bough,
And nourish her delicious fruit awhile,
Till, ripen'd by the genial sun, her skin
Is finely clouded o'er with glossy blue.
Oh, let no furious blast disturb our orchards
Richly hung with yellow treasures,
Before the autumn's kindly warmth has given
Their juices a rich flavour, and the sun
Tinged o'er their blushing sides with streaks of gold.

Newcomb.

THE ORCHARD.

Apple—Citron—Pear—Quince—Cherry—Plum—Greengage—Peach—Nectarine—Apricot—Mammee—Olive—Orange—Lemon—Lime—Shaddock—Melon—Pomegranate—Fig—Sycamore—Walnut—Filbert—Cashew Nut—Brazil Nut—Pistacio—Suwarrow—Almond—Gooseberry—Currant—Raspberry—Strawberry—Cloudberry—Bilberry—Blackberry—Mulberry—Vine—Bread Fruit—Banana—Plantain—Mango—Mangostan—Papaw—Durian—Guava—Cream Fruit—Tamarind—Forbidden Fruit.

"If possible, have a good orchard," wrote Dr. Samuel Johnson to a friend. "I know a clergyman of small income who brought up a family very reputably, which he chiefly fed on apple dumplings!" Though we do not wish to be reduced to the limited fare of the worthy divine, we shall undoubtedly regard an orchard as an important source of provision granted to us by our heavenly Father.

A ramble through such a scene of fruitfulness will be alike pleasant and profitable. Let us, then, go forth, and as we pass along we may be reminded of the productions of lands far away—

> Where groves that bloom in endless spring
> Are rustling to the radiant wing
> Of birds, in various plumage bright
> As rainbow hues or dawning light,
> When from the fruit trees spreading tall
> The richly ripened clusters fall.

The far-famed *Apple*,[1] undoubtedly, claims our first attention. Its praise was sung by Homer; it crowned the banquets of the old Roman republicans, and was familiar to our Saxon forefathers in their revels. France gave to us, in the days of Queen Mary, the nonpareil; and pippins came to us from the continent in the reign of Henry the Eighth. These last were so called because the trees were raised from pips or seeds, and bore fruit without grafting.



APPLE, PEAR, AND QUINCE.

Among other choice qualities of this fruit are Bedfordshire foundlings, Cornish gilliflowers, Devonshire quarrendens, Irish peaches, Jersey sweetings, Kentish beauties, Norfolk beaufins, summer queens, winter blushes, golden

1 Pyrus malus.

pippins, red streaks, white juneatings, crimson reinettes, yellow codlins, scarlet pearmains, russet ribstons, big-sweets, sops-of-wine, cats'-heads, seek-no-furthers, drap d'ors, gloria-mundis, sine-qua-nons, with hundreds of others, of strange names, given at the caprice of those who first brought them into notice.

The *Crab apple* is found in the common hedgerows and woods of our land. Some botanists have maintained that from this sour and bitter fruit all the finer kinds of apples have been derived.

The apple is a slow-growing tree; but it bears to a good old age. It is not an uncommon sight to see it laden with fruit when its trunk is in a state of decay. No fruit is more generally relished or used than this product of our orchard. It is wholesome, and even medicinal. Roasted and boiled, in pies, sauces, preserves, and jellies, and as a dessert, it stands high in our esteem. When dried it is a considerable article of commerce; the pulp, mixed with lard, forms pomatum; and cider is made from its juice.

In former days, in the hope of obtaining a good crop of fruit, a bowlful of cider was poured on the roots of the apple tree, while the farmer and his men danced in a circle round it, singing words like these:—

> Here's to thee, old apple tree,
> Whence thou mayst bud, and whence thou mayst blow;
> And whence thou mayst bear apples enow,
> Hats full! caps full!
> Bushels and sacks full! Huzza!

An apple orchard in spring is a goodly sight, with its delicate blossoms scenting the morning breeze; and in summer and autumn it courts our notice with its substantial fruit. Who can gaze on such a scene without feeling his heart beat with gratitude to the Giver of all good?

Belgium is the great country of the *Pear*,[1] where it is found in the largest variety, and of the richest flavour. This fruit was introduced into England by the Roman conquerors. It was in great reputation in this land during the middle ages, and particular attention was paid to its cultivation in the neighbourhood of London. Old Gerard, the naturalist, when writing about English pears, which he pronounced to be "exceeding good," says, "Master Richard Pointer has them all growing in his ground at Twickenham, near London, who is a most cunning and curious grafter and planter of all manner of rare fruits; and also in the ground of an excellent grafter and painful planter, master Henry Bunbury, of Touthil Street, near unto Westminster; and likewise in the ground of a diligent and most affectionate lover of plants, master Warner, neere Horsly-down; and in divers other grounds about London." Worcester was celebrated in early times, as it is at the present day, for the growth of this fruit; three pears are delineated on its coat of arms.

In its wild state the fruit is hard and nauseous; when cultivated it is among the most delicious of morsels. The greatest favourites are the bergamot, jargonelle, Marie-Louise, and Windsor. Some pear trees have been known to live to the age of four hundred years. The wood is heavy and fine-grained, and when stained is a good imitation of ebony. The fermented juice of the fruit is called perry.

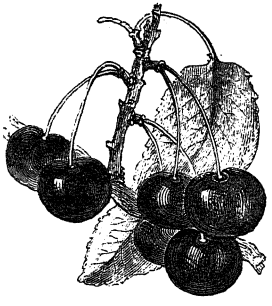
The West Indies possesses a delicious fruit called the *Alligator Pear*.[2] It has the flavour of a peach, is eaten with sugar and lime-juice, and is esteemed by the people as above every other fruit. It is, however, of the laurel tribe, and not of the family of true pears.

[1] Pyrus communis.

[2] Laurus persea.

The *Anchovy Pear*[1] is another West Indian fruit, which is made into pickles; it is of large size, and of a pulpy nature.

Allied to the pear is the *Quince*,[2] which grows in its perfection in the south of France, but is found in some parts of England. It is largely used in foreign parts in making the best marmalade—a confectionery now more commonly made of oranges; but its name is derived from the Portuguese *marmelo*, "a quince." The tree is generally of small size, and has crooked branches. It first attracted notice in early times in the city of Cydon, in Crete, whence its scientific name. The fruit is of a fine golden colour, and was highly esteemed by the ancient Greeks and Romans as a preserve. One of their writers maintains that "quinces not only yield pleasure, but health." The *Chinese Quince*[3] is remarkable for its numerous brilliant flowers.



THE CHERRY.

Now turn to the *Cherry*,[4] one of our precious stone fruits, whether black, red, or white. In the spring the cherry tree is profusely covered with snow-white blossoms; and earlier in summer than any other tree, it is laden with an abundance of sweet, juicy fruit. This tree came originally from Asia; and the Romans in their conquests carried it with them, planting it in lands they brought under their sway. One kind, known as the Kentish, was brought to us by the

1 Grias cauliflora.
2 Pyrus cydonia.
3 Cydonia sinensis.
4 Prunus cerasus.

Knight-Templars, on their return from the crusades, and first planted near Sittingbourne, in the county of Kent. There are now about two hundred and fifty varieties cultivated in England.

Mr. Loudon, in his "*Arboretum*," gives the following account of the cherry avenues in Germany:—"On the con-



CHERRY AVENUE.

tinent, and more especially in Germany and Switzerland, the cherry is much used as a roadside tree, particularly in parts where the apple and the pear will not thrive. In some countries the road passes for many miles together through an avenue of cherry trees. In Moravia, the road from Brunn to Olmutz passes through such an avenue, extending upwards of sixty miles in length; and in the autumn of 1828 we travelled for several days through almost one continuous avenue of cherry trees, from Strasburg by a circui-

tous route to Munich. These avenues, in Germany, are planted by the desire of the respective governments, not only for shading the traveller, but in order that the poor pedestrian may obtain refreshment on his journey. All persons are allowed to partake of the cherries, on condition of not injuring the trees; but the main crop of the cherries when ripe is gathered by the respective proprietors of the land on which it grows; and when these are anxious to preserve the fruit of any particular tree it is, as it were, tabooed, that is, a wisp of straw is tied in a conspicuous part to one of the branches, as vines by the roadside in France, when the grapes are ripe, are protected by sprinkling a plant here and there with a mixture of lime and water, which marks the leaves with conspicuous white blotches. Every one who has travelled on the continent in the fruit season must have observed the respect that is paid to these appropriating marks; and there is something highly gratifying in this, and in the humane feeling displayed by the princes of the different countries in causing the trees to be planted. It would, indeed, be lamentable if kind treatment did not produce a corresponding return."

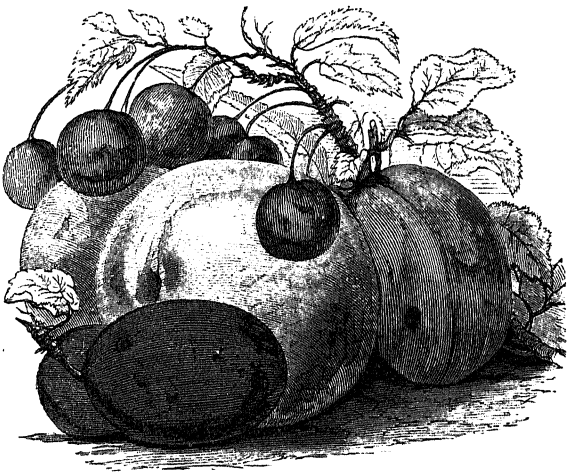
Another stone fruit is the *Plum*,[1] of which there are nearly three hundred varieties. It is said that they have all been derived from the common wild sloe; if so, how great is the contrast between that little crude berry and the luscious magnum-bonum! Of the principal kinds, the Orleans came to us from Orleans in France; and the damson, or damescene, from Damascus. Dried plums are known as prunes, which are exported from France to almost every land.

A sugary fruit called the *Sappodilla Plum*[2] is a native of

[1] Prunus domestica. [2] Achras sapota.

the West Indies. The bark of the tree, as well as the fruit, yields a thick milk, which, exposed to the heat of the sun, becomes an effective birdlime, for which purpose the young negroes employ it.

The *Greengage*[1] was first cultivated in England by a family of the name of Gage; it was brought from France, where it was called "La Reine Claude," from the wife of king Francis, with whom it was a great favourite.



PEACH, APRICOT, PLUM, AND CHERRY.

The delicious *Peach*[2] ranks high among our stone fruits. It was brought from Persia to Rome, and from Rome to England. The peaches from Pekin, in China, are celebrated as being the finest in the world, and of double the usual size. In the neighbourhood of Paris the tree is largely cultivated;

1 Prunus viridis. 2 Persica vulgaris.

one of the principal gardens has a peach tree which covers sixty feet of wall, and yields an excellent fruit. Thousands of acres are devoted in the United States of America to peach orchards; and in the state of New Jersey orchards containing from 10,000 to 20,000 peach trees are not uncommon. The fruit is largely sent to market in a dried state, as well as fresh and blooming. A great service was rendered to a tribe in the interior of South Africa when Burchell, the traveller, gave their chief a bag of fresh peach stones, and told him that they would produce trees which would yield, without trouble, an abundance of fruit of a more agreeable flavour than any which grew in that country. In this way a benefit was conferred which future generations of Africans will remember with gratitude. "Why have not everywhere the names been preserved," says Baron Humboldt, "of those who, instead of ravaging the earth with war, have enriched it with plants useful to the human race?"

The *Nectarine* is only a variety of the peach, with a smooth skin.

From the peach we naturally turn to the *Apricot*,[1] a native of Armenia, and the higher regions of Central Asia. In Persia it is called "the fruit of the sun." It is one of the finest of stone fruit trees, easily known by its glossy, heart-shaped foliage, and ruddy fruit. In the early spring it puts forth its charming blossoms, and in the summer yields its delicious fruits, which are alike enjoyable whether as a dessert or a preserve. It is said that it originally possessed a poisonous nature, and was known in Africa as "the killer of Christians;" but whatever hurtful qualities it once possessed, it is now by cultivation a valued

[1] Prunus armeniaca.

dainty. The first apricot tree was brought to England in 1524, by Henry the Eighth's head gardener.

In the West Indies is a tree, the *Mammee*,[1] which bears a fruit of the colour, consistency, and flavour of the apricot, but inclosed in a tough outer skin, which removed, a fragrant and pleasant fruit presents itself to the tempted appetite.

Among the stone fruits must be placed the *Olive*,[2] a tree from which it has been said we derive "light, food, medicine, and fragrance." It is a native of the sea-coast ridges of Asia, and also of Southern Europe. In height it is about twenty feet, and its spreading branches are evergreen. About the middle of June its lilac flowers appear in bunches, succeeded by the small green fruit, which as it ripens becomes of a purple colour. The leaves are of a dark green on the upper side, and of a silvery shade on the under parts. The oil which it largely yields is now a considerable article of commerce. The best kind comes from Florence. The berry or fruit is pickled, and is much used in desserts. In the researches while excavating around the buried city of Pompeii, a glass of olives, pickled exactly as they are now, was dug out, and their flavour was scarcely changed.

An interest has belonged to this tree from the time Noah sent forth a dove from the ark, which returned bearing an olive leaf, showing that the waters had begun to abate. A branch of this tree has ever since been regarded as an emblem or token of peace. The Jews gave much attention to the cultivation of this tree. Olive-yards were very numerous. They were owned even by kings. David set officers over his "olive trees, and over the cellars of oil."[3] The holy anointing oil, scented with myrrh and other

[1] Mammea americana. [2] Olea europæa. [3] 1 Chron. xxvii. 28.

perfumes, came from these trees; and they also supplied the lamps in the temple, and in the private houses of the Jews.[1] The fruit was gathered by beating the trees with a stick,[2] and by shaking the branches.[3] It was then crushed



THE OLIVE TREE.

in a press. Olive oil is an emblem of spiritual gifts and grace, and the olive tree of the righteous.[4]

In speaking of this tree our thoughts turn to the Mount

1 Exod. xxvii. 20. 2 Deut. xxiv. 20. 3 Isa. xvii. 6. 4 Psa. lii. 8.

of Olives, where our Saviour, "being in an agony, prayed more earnestly, and his sweat was as it were great drops of blood falling down to the ground."[1] Several olives, very large and very old, still mark the spot of the garden of Gethsemane. Mrs. Hemans, in one of her sonnets, alludes very beautifully to the ever-memorable scene in the olive-garden of Gethsemane:—

> The palm—the vine—the cedar—each hath power
> To bid fair oriental shapes glance by,
> And each quick glistening of the laurel bower
> Wafts Grecian images o'er fancy's eye:
> But thou, pale Olive! in thy branches lie
> Far deeper spells than prophet-grove of old
> Might e'er enshrine:—I could not hear thee sigh
> To the wind's faintest whisper, nor behold
> One shiver of thy leaves' dim silvery green,
> Without high thoughts and solemn, of that scene
> When, in the Garden, the Redeemer prayed—
> When pale stars looked upon his fainting head,
> And angels ministering in silent dread
> Trembled, perchance, within thy trembling shade.

Lieutenant Lynch[2] has described his visit to this olive garden:—

"The clover upon the ground was in bloom, and altogether the garden, in its aspects and associations, was better calculated than any place I know to soothe a troubled spirit. Eight venerable trees, isolated from the smaller and less imposing ones which skirt the pass of the Mount of Olives, form a consecrated grove. High above, on either hand, towers a very lofty mountain, with the deep, yawning chasm of Jehoshaphat between them. Crowning

1 Luke xxii. 44.

2 "Exploring Expedition of the United States' Commission to the Holy Land."

one of them is Jerusalem, a living city; on the slope of the other is the great Jewish cemetery, a city of the dead. Each tree in this grove, cankered, and gnarled, and furrowed by age, yet beautiful and impressive in its decay, is a living monument of the affecting scenes that have taken place beneath and around it. The olive perpetuates itself, and from the root of the dying parent stem the young tree springs into existence. These are accounted one thousand years old. Under those of the preceding growth, therefore, the Saviour was wont to rest; and one of the present may mark the very spot where he knelt and prayed and wept. No cavilling doubt can find entrance here. The geographical boundaries are too distinct and clear for an instant's hesitation. Here the Christian, forgetful of the present, and absorbed in the past, can resign himself to sad, yet soothing meditation. The few purple and crimson flowers, growing about the roots of the trees, will give ample food for contemplation—for they tell of the suffering and the ensanguined death of the Redeemer."

An important family of fruit trees comprise the orange, lemon, lime, shaddock, and forbidden fruit.

We first notice the sweet *Orange tree*,[1] which in Spain, Portugal, and Italy, attains a large size; but it flourishes most luxuriously in St. Michael's, one of the Azores, or Western Islands, in the Atlantic Ocean. It flowers during nearly the whole of the summer, the fruit taking two years to arrive at maturity; so that, during several months in the year, a healthy tree exhibits every stage, from the flower-bud to the ripe fruit. The orange orchards of St. Michael are of large extent. It is not easy to conceive their rich

[1] Citrus aurantium.

appearance during the principal fruit months, when the emerald tints of the unripe, and golden hue of the mature fruit, mingle their beauties with the thick dark foliage of



ORANGE-GATHERING IN THE AZORES.

the trees, while the bright blossoms diffuse a sweetness the most delicious.

The orange, with a vernal face,
Wears every rich autumnal grace;
While the young blossoms here unfold,
There shines the fruit like pendent gold.

In some instances, orange orchards overhang the sides of a glen or ravine, and intermingle with the arbutus, and display their charms to greater advantage.

The picking of the fruit is sometimes performed by children, scores of whom are to be seen scattered among the branches, putting the produce into small baskets, laughing, hallooing, singing, and playing pranks with one another at the same time, as though it were some amusing game in which they were employed, rather than a laborious task. Not unfrequently the weight of the little urchins overturns the trees, in consequence of the lightness of the soil, and the small depth to which the roots proceed. The season of usefulness of the trees, however, is by no means passed, for though lying on the ground, and continuing so for years, the produce is abundant.

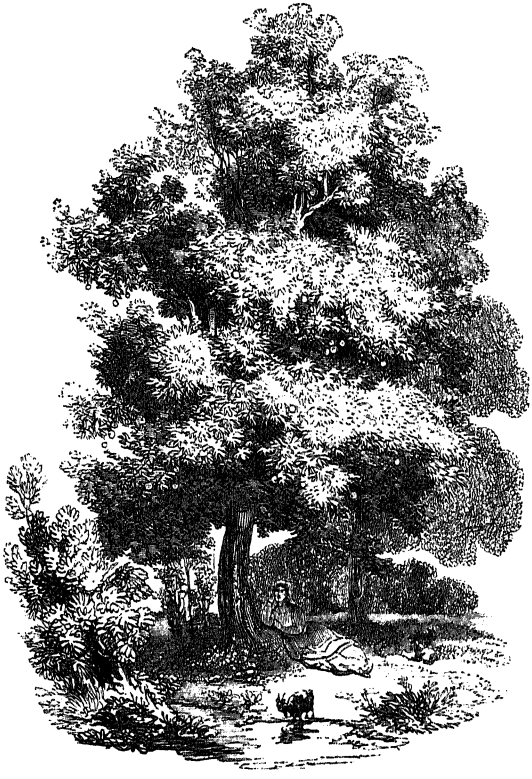
There is an old story that the first orange trees planted near Dresden came as ballast, without root or branches, in the hold of a German vessel. A gardener, not knowing what the new wood was, planted it, and by mistake put it upside down. But in spite of this treatment the trunks grew, and became flourishing orange trees. Rough and unnatural usage can scarcely destroy vegetable vitality.

The earliest oranges were brought into England by Sir Walter Raleigh; and the first trees were planted by Sir Francis Carew, who married his niece, at Beddington, in Surrey. At Hampton Court there are trees said to be three hundred years old.

Seville Oranges[1] have a bitter rind, and are used as a preserve and in medicine.

[1] Citrus vulgaris.

The *Blood Orange*, or the *Malta*, is so called from the blood-red colour of the flesh.



THE CITRON TREE.

The *Mandarin Orange* is an esteemed species in China, where its fruit is chiefly consumed in presents to great officers of state, whence its name. It is now, however, also cultivated in Malta.

A tree belonging to the orange tribe—which is now commonly considered to be the apple of Scripture—is the *Citron*.[1] Its fruit is sweet, of a golden colour, and used in the East to revive those that are faint.[2] Indeed, Oriental ladies keep it in their rooms, and hold it in their hands, smelling it as they would a scent bottle. Travellers have been entertained in a Syrian garden, under the shade of a large citron tree, while the pleasant fruit has been shaken from its boughs for their repast. This will remind us of the words, "I sat down under his shadow with great delight, and his fruit was sweet to my taste."[3] Considering this tree as the chief of all the trees in the land of Judea—having respect to its beauty, the shade which it yields, its perpetual bloom, and the value of its fruit for food, health, and healing—there is much force and propriety in using it as an emblem of our Lord Jesus Christ: "As the apple (citron) tree among the trees of the wood, so is my Beloved among the sons."[4] In Him we find shelter, support, and life.

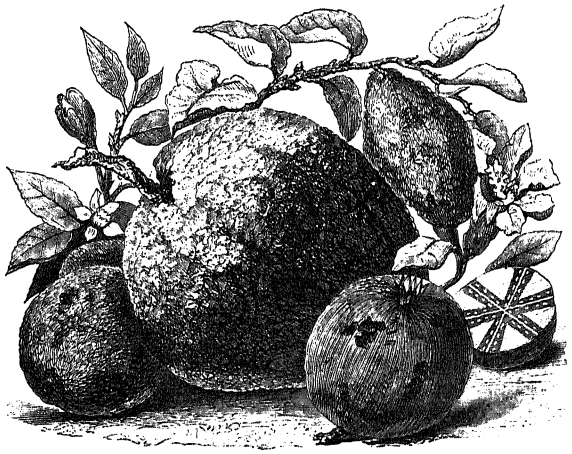
The *Lemon*[5] has longer and paler leaves than the orange; the flowers are tinged with red, and the fruit is oblong, of a pale yellow colour, and of an acid pulp. The useful parts of the fruit are the juice, which forms the cooling drink known as lemonade, and the volatile oil of the rind. It is believed that it came originally from India, and slowly made its way into Europe. A single tree will bear 8000 lemons.

Limes[6] differ from lemons in being smaller, and of a roundish form. When in a green state the fruit is much used as a preserve. The Italians cultivate a lime which

1 Citrus medica.
2 Sol. Song ii. 3; vii. 8; Prov. xxv. 11.
3 Sol. Song ii. 3.
4 Sol. Song ii. 3.
5 Citrus limonum.
6 Citrus limetta.

they call "Adam's apple," and assert that they can trace in it the mark of his teeth.

The *Shaddock*[1] may be called a monster orange. It has a sweet pulp, and its oriental name means "sweet ball." The English name was given to it from the fact that a captain Shaddock carried it from China, its native place, to the West Indies, where he planted it. The shaddock tree makes a beautiful appearance when laden with fruit, but is more showy than useful, as it is not much esteemed for its produce.



MELON, POMEGRANATE, CITRON, AND ORANGE.

One of the most important of the gourd and cucumber tribe is the rich and noble-looking *Melon*.[2] It is a trailing annual, and supposed to be originally from Persia. There

1 Citrus decumana. 2 Cucumis melo.

are about one hundred varieties, the most esteemed being the water melon, the citron melon, the yellow-fleshed, and the Persian.

The melon derives its Hebrew name (*abatachim*, which means "to cling close") from the manner in which it twines around any plant or tree that may grow near it. The air and soil of Egypt are very favourable to the growth of the melon, and it is in that country largely cultivated. On the banks of the Nile it is found in great abundance: the boatmen, in passing along the river, freely help themselves; and the traveller by land gladly allays his thirst with its sweet and pleasant juice, as he journeys beneath a scorching sun.

The Egyptian melon is large, smooth, and round; and of a much superior quality to that which is grown in Europe. It is valued by all classes; by the poor especially, who chiefly live on it during the summer season. It is said to serve them for "meat, drink, and physic." The substance and the red pulp are eaten with bread; and the juice is a cool and refreshing drink.

In some places large fields of melons have a "lodge," or hut, made of reeds and poles, in which an old man sits, watching the fruit, or employing himself in packing it for store or market. When the season is past, these huts are left to the rage of the storm; and in their ruined state may well be looked upon as emblems of desolation: as such they are referred to by the prophet when describing the ruin that should come upon Zion.[1]

Of pulpy fruits borne by shrubs and trees the *Pomegranate*[2] takes a distinguished place. A native of China and the south of Europe, it is largely imported into England. The fruit is the size of an apple; the skin is hard and

1 Isa. i. 8.

2 Punica granatum.

leathery; and the interior consists of seeds enveloped in pulp, and arranged in compartments. Medicinally, it is cooling and much esteemed, and is "full of melting sweetness," as sings the poet Moore. It does not attain to perfection in this country, though the tree is sometimes planted in shrubberies, for the sake of its bright scarlet flowers. In the East "there are three varieties of this fruit," says Dr. Russell: "one sweet; another acid, which, with the Turks, serves the same purposes as lemon juice does with us; while the third partakes of both qualities agreeably blended. They are cut open when served up at the table, or the grains, taken out and sprinkled with sugar and rose-water, are brought up to table in saucers. The seeds also, fresh as well as dried, are much used in cookery." It will be remembered that the figure of the pomegranate was an ornament worked in blue on the hem of the high priest's robe;[1] and the tops of some of the pillars in the temple built by Solomon were adorned with the same.[2] This fruit is also mentioned in the Song of Solomon and by the prophets, and always in a manner that shows the high value that was set upon it by the Jews.

Another much valued pulp fruit is the *Fig*,[3] though not of great repute in England in former days, for, according to old writers, if a person wished to express contempt of another he would say, "I care not a fig for him." However, its worth is now more fully appreciated. The tree is remarkable as having no visible flower, the fruit appearing in the form of small buds on the branches of the tree. The tree will bear three times in the year. Some fig trees in the archbishop of Canterbury's garden, at Lambeth, are said to have been brought from Italy, and planted in 1525.

1 Exod. xxviii. 33, 34. 2 1 Kings vii. 18. 3 Ficus carica.

The history of the fig is as ancient as the world. It grew in Paradise, and its leaves were used by our first parents as a covering when they had lost their innocence through sin.[1]



FIG TREE.

The spies sent by the Israelites into the land of Canaan, before it came into their possession, brought figs among

1 Gen. iii. 7.

other samples of the fruitfulness of the land. Figs were among the first-fruits offered in the temple. Cakes of figs formed part of the present of the wife of the churlish Nabal to David.[1]

This tree yields a pleasant shade, and is referred to as an emblem of peace and security.[2] Under its shadow the pious Jews often retired.

Travellers speak with pleasure of the shelter they have found from the heat of the sun under this tree. "Occasionally," say Dr. Keith and his companions, "we noticed a fig tree, up which a vine had climbed, so that the combined shade of the vine and fig tree might here be enjoyed together. One of the camel-drivers, pointing to a cluster of six large fig trees, cried out, 'Under the fig tree!' and soon we felt the pleasantness of this shade; for there is something peculiarly delightful in the shade of the tree. It is far superior to the shelter of a tent, and perhaps even to the shadow of a rock; since not only does the mass of heavy foliage completely exclude the rays of the sun, but the traveller finds under it a peculiar coolness arising from the air gently creeping through the branches. Hence the encouraging prophecy, 'In that day, saith the Lord of hosts, shall ye call every man his neighbour under the vine and under the fig tree.'[3]—Reclining under these six fig trees we enjoyed a short repose, the servants and camels being all gathered round us under the same grateful shade." [4]

The fruit appears before the leaves; consequently, when our Saviour saw a tree bearing leaves, he might justly look for fruit.[5] When our Lord cursed the tree it was a teaching act, that the Jews might be impressed with the truth that God looked for fruit from them as a people; but

[1] 1 Sam. xxv. 18. [2] 1 Kings iv. 25. [3] Zech. iii. 10.
[4] "Narrative of a Mission to the Jews." [5] Mark xi. 13.

if they were found barren, they might expect his wrath. It should also affect our minds with a solemn lesson. God looks for the fruits of faith, love, and holiness; and if these are not seen in our hearts and lives, we are only as barren fig trees by the wayside.

Ah, where is that green leafy show,
That promised such fruit to bestow?
It is gone—and the tree, too, is dried up and gone:
And how was the work so decisively done,
That forbade it for ever to grow?

It was not the tempest, when wide
It scatters the dark forest's pride,
At the bidding of Him whom the tempests obey;
But it was that swift word which had only to say,
Die, profitless tree!—and it died.

And so will fresh piety shoot
With deceitful appearance of fruit;
But I've seen the leaves fall and the branches decay,
And the fair budding promises wither away,
From the failure of life at the root.

It is, however, to be noted, that sometimes the fig tree of Scripture is the *Sycamore*[1]—which derives its name from two Greek words:—*sycos*, a fig, and *morus*, a mulberry. It resembles the first in its fruit, and the latter in its leaves. The wood of this tree is very durable. It is said that all the wood found in the catacombs of Egypt is of the sycamore tree, which, though light and porous, has remained uncorrupted for three thousand years. The uses made of its wood, of its fruit, and of its fine shade, made it most valuable to the Egyptians. Hence the psalmist expressly

[1] Sycomorus antiquorum.

mentions, among the judgments sent upon Egypt, th sycamore trees were destroyed with frost.[1]

It is described by a traveller in Egypt as follows: is of the height of a beech, and bears its fruit in a m different from other trees. It has them on the trunk which shoots out like sprigs in the form of grape sta the end of which grows the fruit like bunches of g The tree is always green, and bears fruit several tin the year. The fruit has the figure and smell of real f of a yellowish colour, and blackish in the inside.



people mostly live upon its fruit, and think themselves supplied when they have a piece of bread, a coupl sycamore figs, and a pitcher of water."

The *Sycamine*[2] is thought by some writers to be the s as the sycamore; others consider it to be the mulb tree. The banyan, which we have elsewhere noticed, is of this tribe.

[1] Psa. lxxviii. 47. [2] Luke xvii. 6.

In our orchard survey we now turn to the NUT tribe. It consists of those trees which bear hard dry fruits, containing one or two seeds or kernels, encased in a woody husk. Some of these, as the chesnut and the cocoa-nut, have been noticed in our visits to the FOREST and the PALM HOUSE: we now consider some familiar to us as pleasant dessert fruits.

The *Walnut*[1] was brought to England from Turkey. It was a tree of note in ancient Rome, where, at the conclusion of a marriage ceremony, the young couple threw walnuts among their friends and neighbours, as an emblem that they now cast aside childish sports, and took upon them the serious cares of life. A similar custom still prevails in some of the southern countries of Europe. The walnut tree grows to a considerable height, and presents a noble appearance. The fruit in a green state is much used for pickling and making catsup. An oil is also obtained from the ripe fruit. The wood of the tree is often beautifully veined, and is much valued for articles of furniture. In some parts of France the strange-looking heavy shoes of the peasantry are made of the walnut tree.

Next to the walnut we must glance at the *Filbert*,[2] or "full beards," from the length of the husk. It is an improved variety of the hazel nut, so well known to schoolboys.

> The clustering hazel; ah! as with a spell,
> Those few brief words recall the bygone hours,
> When the heart's pulse was music, and on flowers,
> Bright, thornless flowers, my footsteps ever fell.
> Even now, methinks, I see the bushy dell,

1 Juglans regia. 2 Coryllus avellana.

The tangled brake, green lane, or sunny glade,
Where on a sunshine holiday I strayed,
Plucking the ripening fruits with eager glee,
Which from the hazel boughs hung temptingly.

But the filbert is three times as large as the common hazel, and from its size and excellent flavour is in high esteem as a dessert.



THE CASHEW NUT.

The *Cashew-nut tree*[1] flourishes in hot tropical countries, and is not unlike the walnut in its general appearance. The nut grows at the end of what is commonly called "the apple." It is of a kidney shape, inclosed in two shells, between which there is an inflammable oil, of so caustic a nature that if applied to the tongue it raises severe blisters. The kernel when roasted is of a pleasant taste; and from the fleshy apple a strong acid drink is distilled.

Brazil nuts[2] are the seeds of a stately tree. The triangular, three-cornered seeds grow in woody pods, each pod containing from twelve to twenty nuts. These are of agreeable taste, and also yield an oil. As the tree rises to about one hundred feet before it throws out a branch, it is perilous to pass under it, lest one of the heavy pods should fall on the head, and thus endanger the traveller's life. This great height also renders it difficult to obtain the

1 Anacardium occidentale. 2 Bertholletia excelsa.

fruit, which has led to the adoption of a singular device. Numerous monkeys are observed to climb the trees, to feast on the nuts, of which they are very fond, when the nut-gatherers cautiously approach, and cast stones at the nimble creatures, who, in revenge, pelt their assailants with the pods; and so the attack and defence continue until a good supply of nuts bestrews the ground. These are quickly collected, and the monkeys are then left to enjoy their possession of the field of battle.

The *Pistacia-nut tree*[1] is found in many eastern countries. It has green-coloured oily kernels, which are of an agreeable flavour.

Another nut lately introduced into this country is the *Suwarrow*,[2] the kernel of which is one of the most delicious fruits of the nut kind, and produces an oil, which is not inferior to that of olives. Sir R. Schomburg discovered the tree in the South American forests, and describes it as attaining to a great size.



And now the beautiful *Almond*[3] arises on our view as it once flourished on the sides of the hills of fertile Canaan. The peach-like blossoms take every shade from pure white to deep pink. It has been commended in all ages as a wholesome and agreeable fruit. Whole orchards in Arabia and the south of Europe are devoted to its cultivation; but Jordan almonds, named after that river, have always received the highest praise; though in fact they come to us

1 Pistacia vera. 2 Pekea tuberculosa. 3 Amygdalus communis.

shakad, which signifies "the waker," or "the watcher."



ALMOND, FILBERT, AND WALNUT.

Its flowers appear before the leaves, to which fact the poet Moore alludes:—

> The hope, in dreams of a happier hour,
> That alights on Misery's brow,
> Springs out of a silvery almond flower,
> That blooms on a leafless bough.

It is thought to be in reference to its early blossoming that the Lord speaks of the speed with which he would

bring judgments upon the people. "Moreover the word of the Lord came unto me, saying, Jeremiah, what seest thou? And I said, I see a rod of an almond tree. Then said the Lord unto me, Thou hast well seen; for I will hasten my word to perform it."[1]

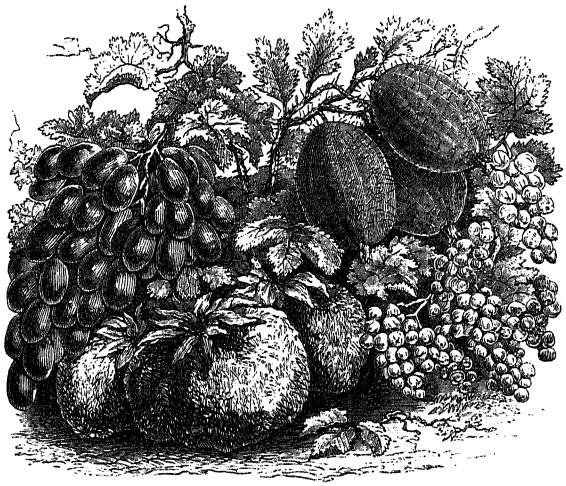
Solomon, in describing the haste with which old age comes upon us, says, "The almond tree shall flourish."[2] He had just before given the solemn admonition, "Remember now thy Creator in the days of thy youth, while the evil days come not, nor the years draw nigh, when thou shalt say, I have no pleasure in them."[3] As though he would teach us to seek the Lord when the powers and affections of the mind are strong, and when the whole of life is before us. For how sad it is to see an aged man without any knowledge of God as his Friend, or Christ as his Saviour! Happy is that heart which, like the almond tree, hastens to blossom towards God in the spring of an early piety.

We will now consider some of the pulpy fruits borne chiefly by shrubs; and the first is the *Gooseberry*,[4] a fruit of temperate climates, and which is said to improve the further north it is grown. There are many sorts, white, green, yellow, and red. English gooseberries are far better than those grown in the south of Europe; in the neighbourhood of Edinburgh they are still better, and best of all in the north of Scotland, about Aberdeen. Lancashire is famous for its "gooseberry show," held once a year. Mr. Loudon calls this "the fruit of the poor," and says that it is the most valuable of all fruits, "since it can grow in less

1 Jer. i. 11, 12.
2 Eccl. xii. 5.
3 Eccl. xii. 1.
4 Ribes grossularia.

space, in more unfavourable circumstances, and is brought sooner into bearing than any other."

The *Currant*[1] is a native of Great Britain, and is a hardy shrub, seldom growing more than three or four feet high. The *Black Currant*[2] is a distinct species, with larger leaves, and is much used in making jam. The currants of com-



GOOSEBERRY, CURRANT, GRAPE, AND STRAWBERRY.

merce, imported in a dry state, and sold by grocers, are the fruit of Corinth grapes or small raisins.

Among those fruits whose seeds are embedded on the outer surface is the *Raspberry*,[3] which received its name from its rough and rasped appearance. The European sorts were originally produced from a single plant found on Mount Ida in Greece.

1 Ribes rubrum. 2 Ribes nigrum. 3 Ribes idæus.

With this last-named fruit we naturally associate the *Strawberry*.[1] This delicious fruit derived its name from the practice of gardeners laying straw under the plants as they came to maturity, to prevent the ripe fruit from being soiled by the garden mould. Our strawberry season is over in a few weeks; in France it lasts for three or four months. The *hautbois* kind is said to have been originally brought from the "high woods" of Bohemia, and which has suggested its name. The poet Wordsworth thus pleads on behalf of the strawberry blossom:—



THE STRAWBERRY.

Strawberry blossoms, one and all,
We must spare them:—here are many.
Look at it, the flower is small,
Small and low, though fair as any.

Pull the daisies, sister Ann,
Pull as many as you can:
Fill your lap, and fill your bosom,
Only spare the strawberry blossom.

Daisies leave no fruit behind,
When the pretty flowerets die;
Pluck them, and another year
As many will be growing here.

God has given a kindlier power
To the flavour'd strawberry flower;
When the months of spring are fled,
Hither let us bend our walk,

1 Fragaria vesca.

Lurking berries, ripe and red,
Then will hang on every stalk;
Each within its leafy bower,
And for that promise spare the flower.

There are other berries—as the *Cranberry*,[1] much used in preserves and tarts, and largely cultivated in North America. The *Cloudberry*,[2] which flourishes on the Scottish mountains even when capped with clouds. It also is found as far as the North Cape of Lapland. The *Bilberry*,[3] which grows abundantly on heath and waste places. The *Blackberry*,[4] or *Brambleberry*—

A fruit full well the schoolboy knows.
Thou bramble of the brake,
So put thou forth thy small white rose,—
I love thee for his sake.

We must not, however, forget to mention the *Black Mulberry*,[5] a celebrated old English fruit, but which came originally from Asia. The tree has been known to live to the age of three hundred years. There are many varieties of the *White Mulberry*,[6] commonly cultivated for the rearing of silkworms, but whose fruit is of no esteem. Another species, the *Paper Mulberry*,[7] is grown in Japan, from which writing paper, ropes, and a kind of cloth are made.

But of all the berries in which the seeds lie embedded in pulp, the *Vine*[8] is the most celebrated. There are three

1 Vaccinum oxycoccus.
2 Rubus chamæmorus.
3 Vaccinium myrtillus.
4 Rubus fruticosus.
5 Morus nigra.
6 Morus alba.
7 Broussonetia papyrifera.
8 Vitis vinifera.

hundred different varieties of this tree, classed according to the shape and colour of the berries.

The vine is one of the choicest gifts of God to the inhabitants of warm climates. Its spreading branches form a bower-like shade from the sultry sun, and its goodly clusters of fruit refresh and satisfy the taste. Hence, joy and mirth prevail in the season of vintage. It was so of yore in Israel;[1] and is so at the present day in Italy.

> Along the shores, among the hills 'tis now
> The heyday of the vintage; all abroad,
> But most the young and of the gentler sex,
> Busy in gathering; all among the vines,
> Some on the ladder, and some underneath,
> Filling their baskets of green wicker-work,
> While many a canzonet and frolic laugh
> Come through the leaves; the vines in light festoons
> From tree to tree, the trees in avenues,
> And every avenue a cover'd walk
> Hung with black clusters. 'Tis enough to make
> The sad man merry, the benevolent one
> Melt into tears—so general is the joy!
> While up and down the cliffs, over the lake,
> Wains oxen-drawn, and pannier'd mules are seen,
> Laden with grapes, and dropping rosy wine.
>
> *Rogers.*

The juice when first pressed out does not possess any of the fiery properties of intoxication: sad is it that it is so much abused as a fermented drink and ardent spirit. The vine also yields a vinegar, and two or three other kinds of acid. In a dried form the fruit is known as raisins, of which several thousand tons are annually imported into this country.

Vineyards were very common among the Jews. They

[1] Isa. xvi. 10.

were usually placed on the southern or sunny sides of hills; sometimes on terraces, or ridges rising one above the other. Great attention was given to their cultivation; the ground was carefully cleared of stones, and fenced with a hedge of thorns.[1] So abundant, indeed, were the vines of Canaan, and so much did they form the wealth of the people, that express laws were made in respect to them.

Palestine is still remarkable for its vines. A traveller who visited that land in 1846 says, "There was a vineyard on our right, and they brought us most beautiful grapes, green and purple, fresh gathered, and covered with bloom; the purple ones in close bunches of great size, and the grapes as large as plums. At daybreak they brought us fresh grapes, cold as ice, and exceedingly fine. We entered the fruitful valley of Eshcol, which we found highly cultivated, and the vines in rich growth, most of them standing from five to six feet in height. The husbandmen were busily engaged, digging round and purging them, and many a withered branch lay on our wayside."[2]

Grapes grow in vast clusters in eastern lands. We are assured that at the present day a bunch from the vines of Damascus will often weigh nearly twenty pounds; while in other places one of ten pounds is very common. And it is thought that even these are inferior to those grown in former days. The grapes brought from Eshcol by the spies sent by Joshua to examine the land of Canaan required to be borne on a stick between the shoulders of two men.

Some years ago, grape vines brought from Syria were planted at Welbeck Abbey, the residence of the duke of Portland, in Nottinghamshire. They thrived, and produced fine fruit. One bunch, sent as a present to the marquis of Rockingham, weighed nineteen pounds. It was four feet

1 Ps. lxxx. 8, 15; Is. v. 1—6; Matt. xxi. 33. 2 Jewish Intelligencer, 1847.

and a half round, and twenty-three inches long. It was carried more than twenty miles on a staff, borne by four men, two of whom carried it in turn; thus affording a singular illustration of the conduct of the spies.

Vines are often referred to emblematically in Holy Scripture. The Jewish nation was "a noble, a choice vine," planted, tended, and watched over by the Lord himself, who rightly looked that they should bear good fruit: but they became "an empty vine;" they "brought forth wild grapes;" their evil conduct was as offensive to him as sour grapes were to persons who attempted to eat them.[1]

Our Lord on one occasion, probably as he was passing through a vineyard, made choice of the emblem of a vine and its fruitful branches, to represent his own person and the happy union of believers with himself. "I am the Vine, ye are the branches: he that abideth in me, and I in him, the same bringeth forth much fruit: for without me ye can do nothing."[2] As the branches receive all their sap and strength from the root of the vine, so believers obtain spiritual life, comfort, and fruitfulness from Christ alone; and by their fruits they are known. Separated from Him we are but barren and worthless branches.

Lord of the vineyard, we adore
That power and grace divine,
Which plants our wild and barren souls
In Christ the living Vine.

For ever there may we abide;
And from that vital root,
Be influence spread through every branch,
To form and feed the fruit.

When grapes were gathered they were thrown into a wine-press, and trodden by men to express the juice. Thus

[1] Isa. v. 2—4; Ezek. xviii. 2. [2] John xv. 5.

never be able to overcome any of his true followers again. It is said,[2] "He treadeth the wine-press of the fierceness and wrath of Almighty God," an expression which shows the condemnation of those who shall be found at last the enemies of God: condemned by him, the Redeemer, who invited them in the day of grace to seek salvation and be eternally happy!

We have tarried so long in the Orchard, that we must be prepared to depart from it; and yet a few more foreign trees claim a passing notice.

The *Bread-fruit tree*[3] is of the greatest value to thousands of the islanders in the South Seas, and in other parts of the world:—

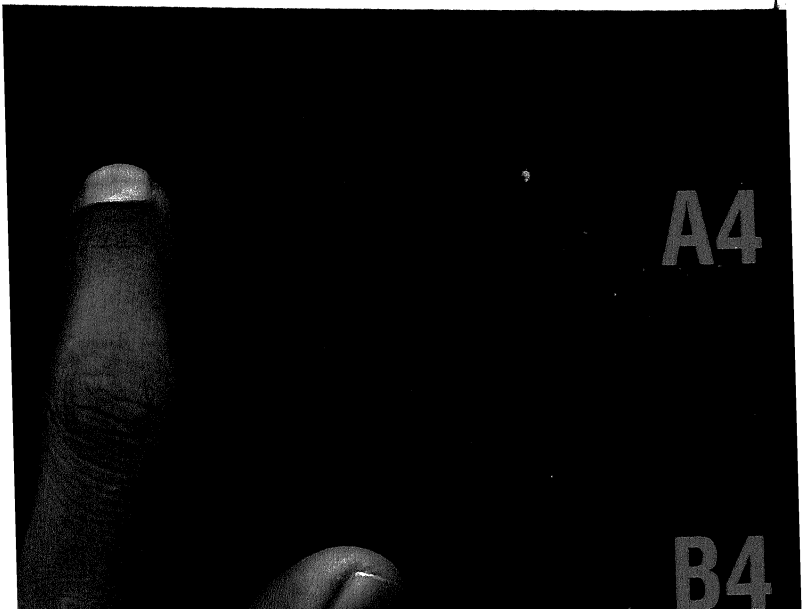
> That tree which, in unfailing stores,
> The staff of life spontaneous pours;
> And to those southern islands yields
> The produce of our labour'd fields.

The bread-fruit tree grows to a large size; the pale green fruit hangs on the boughs like apples, each being of the size of a large melon. When boiled, it is soft, and tastes like a baked potato; and, when baked, it is compared to a soft sponge biscuit. Two or three of these trees mostly grow by the side of a South Sea Islander's hut, and are sufficient to supply his family



BREAD FRUIT.

1 Isa. lxiii. 3. 2 Rev. xix. 15, 16. 3 Artocarpus incisa.

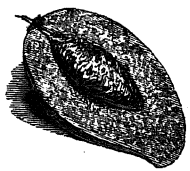


with almost their entire food: from the timber he builds his house and makes his canoe; the juice he uses as glue; the dried flowers serve him for tinder; the leaves for towels; and from the inner bark, beaten together, he makes a kind of cloth.

Another most useful vegetable production is the *Banana*.[1] It is a splendid plant; the long leaves often reaching to ten feet in length, and one in breadth. The tree grows with great rapidity; for before a mere sucker has been in the ground twelve months it begins to bear clusters of fruit, and henceforth yields a rich supply all the year round. The fruit is sweet, and like a ripe pear. A cluster produced on a single plant often contains more than one hundred and fifty fruits, and weighs eighty pounds. And then, if we consider that forty of these fruits are enough to support a man for a week, and that other parts of the tree are made into cloth, cordage, and covering for houses, we shall see how great a blessing is this plant to the inhabitants of the West Indies and other warm countries.

Allied to the banana is the *Plantain*,[2] which bears fruit of a similar kind, of a cucumber form, and which is alike pleasant to the taste and nourishing to the body.

In tropical countries also is found the golden-fruited *Mango*,[3] accounted one of the most delicious of fruits. The tree is large, and the fruit is about the size of a goose's egg; it emits a fragrant odour, and melts in the mouth with a cooling sweetness. In India the fruit is con-

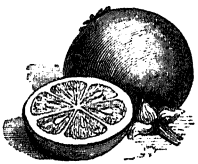


THE MANGO.

1 Musa sapientum. 2 Musa paradisiaca. 3 Mangifera indica.

sidered so precious that guards are placed over it as it approaches to perfection.

Another delightful fruit is the *Mangostan*,[1] a native of Sumatra and the Spice Islands. The fruit is of the size and shape of an orange, of the flavour of the strawberry, pine-apple, and grape combined.



THE MANGOSTAN.

The *Papaw tree*[2] is a native of South America. It is said so rapid is its growth that a seed, when planted, will produce in three years a tree, whose trunk is twenty feet high, with its upper part laden with ripe fruit. It is for the sake of this fruit the tree is cultivated. If gathered before it is ripe, it is soaked in water, boiled, and then eaten as turnips, or baked as apples. The juice of the ripe pulp is a powerful medicine; and the negroes employ the leaves in washing their linen instead of soap. But the most singular use of the papaw tree is to make tough meat tender. In Jamaica, the milky juice of the tree is cast into water, in which meat is steeped, for a few minutes; when it is said to be so soft as to drop in pieces while roasting. Hogs and old poultry are fed on the fruit, for the purpose of making their flesh soft and agreeable.

An oriental fruit of renown is the *Durian*,[3] and reckoned next to the mangostan, or even superior to it, for richness of flavour, although it is not of so agreeable an odour. It is so highly esteemed in the Eastern archipelago, that one durian is worth more than a dozen choice pine-apples.

[1] Garcinia mangostana. [2] Carica papaya. [3] Durio zibethinus.

Better known to English tastes is the *Tamarind*.[3] The pulp in which the seeds are inclosed is of a sharp taste, but which becomes a cooling article of food, possessing medicinal qualities. The tree, adorned with feathery, pale green foliage, and prettily streaked flowers, presents a handsome appearance. Under its shade the cottages of the West Indian negroes are commonly built. The poet Southey thus refers to it:—



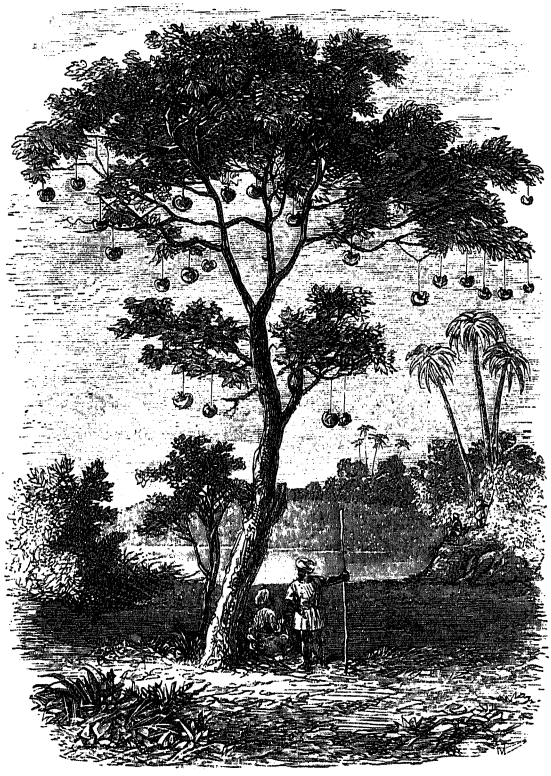
THE TAMARIND.

The damsel from the tamarind tree
Had pluck'd its acid fruit,
And steep'd it in water long;
And whoso drank of the cooling draught,
He would not wish for wine.

Now, lastly, we turn to the *Forbidden Fruit*,[4] which is commonly classed in the same family as the orange and lemon. Its name is derived from a legend that it is the tree which grew in Paradise. Indeed, the Mohammedans assign the site of the garden of Eden to the island of Ceylon, where this tree is extensively found. They say that the fruit may be identified by the fragrance of its flower and the tempting beauty of its colour. It presents the singular

1 Psidium pyriferum.
2 Roupellia grata.
3 Tamarindus indica.
4 Citrus paradisa.

appearance of having had a piece bitten out of it, which, they say, are the marks of the teeth of Eve; and as it now



THE FORBIDDEN FRUIT.

possesses a poisonous quality, it is asserted that this change from a delicious fruit passed over it as a judgment for the disobedience of our first parents.

Certain it is that the tree is held in high veneration by the Cingalese, though its curious pendent fruit is avoided alike for its nauseous taste and the superstitious feeling associated with it. But, however singular and unfounded the eastern legend, the solemn fact in our world's history remains. "When the woman saw that the tree in the midst of the garden was good for food, and that it was pleasant to the eyes, and a tree to be desired to make one wise, she took of the fruit thereof, and did eat, and gave also to her husband, and he did eat."[1] Thus Eve was betrayed into the snare by an inordinate desire to have her senses gratified. She saw; she took; and she did eat; and then became a tempter to her husband. And thus sorrow and sin entered into the world, and death by sin, and so death passed upon all men. But it is our happiness that, as we know of man's fall in Adam, we know of his restoration through the work of the Son of God; and we may well unite in the lines of the poet—

Adam survives throughout his race,
 We do our father's deed by choice;
Like him, we shun our Maker's face,
 And tremble at our Judge's voice.

Yet is our Maker still our Friend;
 Man may yet meet his Judge with joy;
God, in our nature, did not send
 His Son to punish and destroy.

He sent him forth to seek and save
 The lost, the dying, and the dead;
Cancel the curse, despoil the grave,
 And bruise for ever Satan's head.

1 Gen. ii. 17.

Thou, who thy Son to us didst give,
That none who trust in him should die;
Give us to him that we may live;—
To his atoning blood we fly.

Behold his sacrifice of love,
So freely offered in our stead;
Behold him at the throne above,
And save the souls for whom he bled.

Montgomery.

VII.

The Garden.

Flowers, as the changing seasons roll along,
 Still wait on earth, and added beauties lend:
Around the smiling Spring a lovely throng,
 With eager rivalry her steps attend;
Others with Summer brighter glories blend;
 Some grace mild Autumn's more majestic mien;
While some few lingering blooms the brow befriend
 Of hoary Winter, and with grace serene
Enwreath the king of storms with mercy's gentle sheen.

Barton.



A4



THE GARDEN.

FLOWERS.—Rose—Lily—Lotus, or Sacred Bean—Victoria Regia—Australian Lilies—Tulip—Fuchsia—Dahlia—Camellia—Geranium—Hyacinth—Carnation—Pink—Sweet William—Passion Flower—Cactus—Orchid—Rafflesia Arnoldi.

HERBS AND PULSE.—Sage—Parsley—Marjoram—Anise—Coriander—Cummin—Millet—Mint—Pulse—Lentiles—Hyssop.

FLOWERS! sweet flowers! how they spring up around our pathway, sprinkling the pasture and adorning the garden! How beautiful their tints, and how sweet their perfumes! How various their forms, and how constant their succession! Each season and month has its own floral ornaments, from the first snowdrop of January to the Christmas rose!



They are welcomed by all, from the peasant's child, who finds a delight in the simple blossoms of the cottage plot, to the profound investigator of nature, who realizes in them a study and a recreation. We entwine them around the cradle, the brow of the youthful bride is encircled with them, and we wreathe them about the tomb. Indeed, God has implanted within us a strong passion for these bright and beautiful creations of his hand. Poets in every age and in every clime have sung their praise, and lessons of instruction have been suggested from the lowliest buds that adorn the valley or the mountain slope. Well might Linnæus, the Swedish botanist, when beholding for the first time a splendid flower, fall on his knees, and thank God for thus beautifying the earth for man's use and enjoyment. And well might Lord Bacon, as he surveyed a scene of floral beauty, declare that "the enjoyment of a garden was the purest of human pleasures."

> Flowers! to me thou art more beautiful,
> In thy most simple forms, than all that man
> Hath made, with all his genius and his power
> Of combination: for he cannot raise
> One structure, pinnacled, or domed, or gemm'd,
> By architectural rule, or cunning hand,
> Like to the smallest plant, or flower, or leaf,
> Which living hath a tongue, that doth discourse
> Most eloquent of HIM, the great Creator
> Of all living things.

The first object that invites our notice as we enter the parterre is that "queen of flowers," the *Rose*.[1]

This flower is divided into eleven classes, and these are subdivided into many sections. The favourite kinds are the damask, the blush, the moss, the cabbage or hundred-

[1] Rosaceæ, the Rose family.

leaved, the provence, the white, the tea-scented, and the yellow. The *Sweet Briar*, or *Eglantine*,[1] and the *Dog Rose*,[2] found in our hedgerows and thickets, are the humbler specimens of this flower.

The ancient Romans were luxuriant of roses. To enjoy the scent at meals, an abundance of rose leaves was shaken out upon the table, so that the dishes were surrounded.



By an artificial contrivance roses, during a feast, descended on the company from above. Heliogabalus, in his folly, caused violets and roses to be showered down upon his guests in such quantities that a number of them, being unable to extricate themselves, were suffocated in flowers. The ancients also reclined upon cushions stuffed with rose leaves, or made a couch of the leaves themselves. The

1 Rosa rubiginosa. 2 Rosa canina.

floor, too, was strewn with roses, and in this custom great luxury was displayed. Cleopatra, who, at a vast expense, procured roses for a feast which she gave to Antony, had them laid two cubits thick on the floor of the banquet room, and then caused mats to be spread over the flowers, in order to render the footing elastic. A Roman emperor caused not only the banquet rooms, but also the colonnades that led to them, to be covered with roses and lilies interspersed, and then walked about upon this flowery platform.

The Hebrew name of this flower means "to overshadow," indicating the luxuriance of its appearance, spreading over as it does the sides of houses, and covering the walls entirely from view. At the present day it is still largely cultivated in the East. A modern traveller[1] in Persia thus describes a breakfast that was given to himself and other guests at Shiraz. "We were surprised and delighted to find that we were to enjoy this meal on a stack of roses. On this a carpet was laid, and we sat cross-legged like the natives. The stack, which was as large as a common one of hay in England, had been formed without much trouble from the heaps or cocks of rose-leaves collected before they were sent into the city to be distilled. Our mound of roses, added to the fine climate, verdure, gardens, and clear rills, gave a character of singular luxuriance to the rural banquet."

In Bengal there is a district known as Gul-istan, or "the rose-bed." In the spring of the year an extent of many miles around the town of Ghazipore presents to the eye a continued garden of roses. The sight is perfectly dazzling; the plain as far as the eye can reach is covered with the flowers, and the breezes are laden with the sweet odour. Dr. Christison states that at Ghazipore 100,000 roses commonly yield only 180 grains of attar, or concentrated

[1] Sir J. Malcolm, "Sketches in Persia."

perfume of roses; hence the great price at which it is sold.

The *Rose of Sharon* is supposed to be the red cistus, which is found in great quantities on the plains of that part of the Holy Land. Mention of the rose only occurs twice in the Scriptures. This fairest of flowers is chosen to express the excellency of the Divine Redeemer,[1] and as an emblem of the happy times when His kingdom shall be established in the whole earth: "The desert shall rejoice, and blossom as the rose."[2]



LILIES OF VARIOUS KINDS.

The *Lily*[3] is classed with the rose for elegance and beauty. Its name is derived from an old Celtic word, *li*

[1] Sol. Song ii. 1. [2] Isa. xxxv. 1. [3] Lilium.

(whence the French *lis*), meaning "whiteness." The common white lily has been cultivated in England from time immemorial; it is very hardy, and few plants are more readily increased and preserved.

There are various other kinds of lilies, as the lily of the valley, the superb lily, the lily of the field, the martagon, or turk's-cap, the water lily, and the Guernsey lily.

In the East the lily is regarded as a sacred flower. The most esteemed is the pure white. It is supposed that this flower came from Persia, whose chief city was called *Shushan*, which is the Hebrew name of this flower, and which means "light," or "splendour."

In eastern lands lilies grow in great profusion, not only in the gardens, but in the fields and by the wayside. Travellers speak in glowing terms of the beauty they add to the scenery, and of the sweet odour with which they fill the air; especially of that kind called in Scripture the lily of the valley. This plant is not the pretty humble plant known to us by that name, but the larger lily found in our gardens, and which in Palestine grows in its wild state.



LILIES OF PALESTINE.

Our Saviour graciously speaks of himself as "The Lily of the valleys," Sol. Song ii. 1. And, in the next verse, the church is compared to a "lily among thorns."

Mr. Salt, when travelling in the east with a party of friends, met with a new and fine species of lily: it bore from ten to twelve blossoms on each stem; the colour was white, prettily marked with bright purple down the middle. The

scent was very sweet. The whole party stood and admired the numbers of this flower spread over the landscape, and as they looked they were forcibly reminded of the words of our Lord: "Consider the lilies, how they grow; they toil not, they spin not: and yet I say unto you, that Solomon in all his glory was not arrayed like one of these."[1]

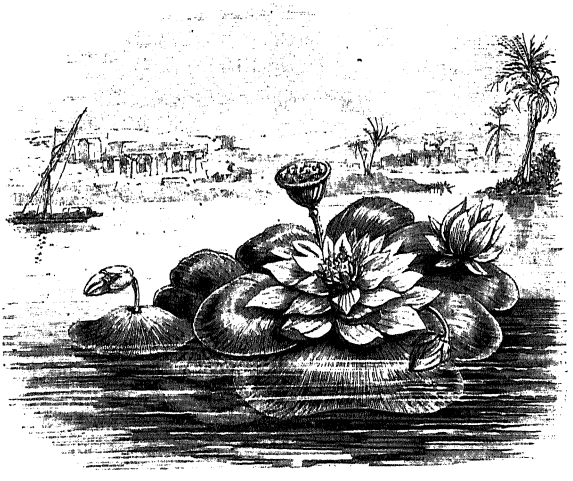
Lilies! when the Saviour's calm, benignant eye
Fell on your gentle beauty; when from you
That heavenly lesson for all hearts he drew,
Eternal, universal as the sky;
Then in the bosom of your purity
A voice he set, as in a temple shrine,
That life's quick travellers ne'er might pass you by
Unwarn'd of that sweet oracle divine;
And though too oft its low, celestial sound
By the harsh notes of work-day care is drown'd,
And the loud steps of vain, unlistening haste,
Yet the great lesson hath no tone of power
Mightier to reach the soul in thought's hush'd hour,
Than yours, meek lilies, chosen thus, and graced.

Mrs. Hemans.

The *Lotus*[2] is supposed to be the same plant as the "sacred bean" of ancient writers; it is also known as "the rose of the Nile." It is by many associated with the water-lily tribe. Representations of the flower is found sculptured on ancient Egyptian and Hindu monuments; and for ages the lotus was held sacred in Egypt, as it still is by the Brahmins of India. It was largely cultivated on the waters of the Nile, though now it is rarely to be met with there. The fleshy stalks and roots supplied a cheap provision for the poor. Its seeds, or beans, were ground, and made into cakes; and its flowers adorned the banquets of the rich. The plant is now common in India and China, and has been met with in North Australia and Queensland. Both leaves

1 Luke xii. 27. 2 Nelumbium speciosum.

and flowers float on the surface of the water. The seeds of the plant were inclosed by the Egyptians in balls of clay or mud, mixed with chopped straw, and cast into the Nile: in due season the beautiful petals appeared, to be shortly followed by buds, flowers, and seeds. From which practice the inspired writer enforces the duty of self-denying zeal and faith: "Cast thy bread upon the waters, for thou shalt find



THE LOTUS.

it after many days;"[1] and of which also the prophet Isaiah speaks when, denouncing coming woes on Egypt, he predicts the failure of "the harvest of the river."[2]

Some years ago a new species, also allied to the water lily, was discovered in British Guiana, and received the name of the *Royal Water Lily*.[3] Sir Robert Schomburg was proceeding along the river Berbice, when he came to a part

1 Eccles. xi. 1. 2 Isa. xxiii. 3. 3 Victoria regia.

wider than the rest. His attention was directed to groups of this wonderful plant, which were stretched out in all their charms on the surface of the stream. Some lay flat, others were like great dishes. The rim of each leaf was bright green, with purple crimson in the middle. The tints of the buds were from pure white to rich pink and rose, and were of the fragrance of the most delicious pine-apples.

If we look at one of the leaves of the plant, we see the under part is covered with air-chambers, which keep it afloat and enable it to bear astonishing weights. A young lady has stood upon one, and been borne up for some time with safety. On the under side, also, there are ribs and cross-girders placed in such a way as to give it very great strength. As we have before stated, Sir Joseph Paxton assures us that the hint he received from this "natural engineering" first led him to devise the self-supporting principle on which he erected the Exhibition building in Hyde Park.

The Victoria water lily was first reared in England at Chatsworth, the mansion of the duke of Devonshire, and blossomed November 1, 1849. The first flower that adorned the plant was presented to queen Victoria, as a fitting tribute to Her Majesty, whose name from the first was given to it.

Two Australian spĕcimens of the lily order have been of late years brought under the notice of botanists. The first is the *Gigantic Lily*, or *Spear Flower*, which from the centre of a vast group of long, broad, curving leaves, sends up a stalk to the height of fifteen feet, crowned with a huge cluster of crimson lilies. The second magnificent specimen is the *Tharatah*, or *Native Tulip*, a tall stately plant, with a woody stem from three to six feet high. It bears leaves of the richest green, and a flower of the most vivid crimson,

looking like a flambeau lighted in the forest. But both these flowers are quite destitute of perfume, and are indebted to their great size and gorgeous-coloured flowers for the admiration they awaken.

Another conspicuous flower, and which in the natural system of botanists is allied to the lily, is the *Tulip*,[1] which derives its name from a Persian word signifying "a turban." There are several hundred species of this flower, presenting the most diversified combinations of colours. It was first brought from Persia to England about the year 1577; and in a century after its introduction there was so great a mania for its roots, as to raise the price of some sorts even to more than a hundred pounds. Unless well protected it is a fragile flower, which has led the old poet Herrick, in his peculiar quaint way, to draw from it a lesson for young maidens:—

Bright Tulips, we do know
Ye had your coming thither;
And fading time doth show
That ye must quickly wither.

Your sisterhoods may stay,
And smile here for an hour;
But ye must die away,
E'en as the meanest flower.

Come, virgins, then, and see
Your frailties, and bemoan ye;
For lost like these,—'twill be
As time had never known ye.

Among our favourite garden flower-shrubs is the elegant *Fuchsia*,[2] originally from South America, and which received its name from Leonard Fuchs, a German botanist of the sixteenth century. It was not, however, till the close of the

1 Tulipa lilium. 2 Fuchsia fulgens.

last century that it was brought into England. As the manner of its introduction is curious, we give it at length.

Mr. Lee, a nurseryman at Hammersmith, near London, was one day showing his treasures to a friend, who suddenly turned to him and declared, "Well, you have not in your collection a prettier flower than I saw this morning at Wapping." "Indeed! and pray what was this curiosity like?" "Why, the plant was elegant, and the flower hung like tassels from the pendent branches; their colour, the



THE FUCHSIA.

richest crimson; in the centre, a fold of deep purple,"—and so on went the friend in its praise. Particular directions being demanded and given, Mr. Lee hastened to Wapping, where he at once saw that the plant was new in this part of the world. He gazed and admired. Entering the house, he said, "My good woman, this is a fine plant; I should like to buy it." "I could not sell it for any money," said she; "for it was brought me from the West Indies by my husband, who has now left me again; and I must keep it for

his sake." "But I must have it." "No, sir, you cannot." "Here," emptying his pocket, "here are copper, silver, gold" (his stock was something more than eight guineas). "Well-a-day! but this is a power of money, sure and sure." "It is yours, and the plant is mine; and, my good woman, you shall have one of the first young ones I rear, to keep for your husband's sake." A coach was called, in which was safely deposited the florist and his seemingly-dear purchase. His first work was to pull off and utterly destroy every blossom and blossom-bud: it was divided into cuttings, which were forced in barkbeds and hotbeds; were re-divided and sub-divided. Every effort was used to multiply the plant. By the commencement of the next flowering season Mr. Lee was the delighted possessor of three hundred fuchsia plants, all giving promise of blossom. The two which opened first were removed into his show-house. A lady came:—"Why, Mr. Lee, where did you get this charming flower?" "It is a new thing, my lady—pretty, is it not?" "Pretty! 'tis lovely. Its price?" "A guinea; thank your ladyship;" and one of the two plants soon stood proudly in her ladyship's drawing-room. Here it was the admiration of all visitors, and inquiries were made as to where it was produced. "Oh! it is a new thing; I saw it at Lee's:—pretty, is it not?" "Pretty! it is beautiful! Its price?" "A guinea; there was another left." The visitor's horses were shortly standing at the gates of Lee's nursery. The second guinea was paid, and the second chosen fuchsia adorned the drawing-room of her second ladyship. A third and a fourth flowering plant was placed where the first and second had stood. This deceptive course was repeated, as new comers were attracted by the beauty of the plant. New chariots flew to the gates of Lee's garden. Two fuchsias—young, graceful, and bursting into healthy flower—were

constantly seen on the same spot in his repository. True to his word, he did not neglect to gladden the heart of the faithful sailor's wife with the promised gift; but, ere the flower season closed, three hundred golden guineas were in his purse, the produce of the single shrub of the sailor's wife of Wapping.

Shortly after the introduction of the fuchsia another gay flower was brought to England—the *Dahlia*. Its native place was Mexico; and its name was given to it in honour of Dahl, a Swedish botanist and friend of Linnæus. Lady Holland was the first in this country who sought to cultivate it. One flower from a root was all that it then produced; but care and science have increased its beauty, variety, and quantity of blossoms. Instead of being confined to noblemen's grounds, it may now be seen flourishing in some of the humblest cottage gardens in the land.



THE CAMELLIA.

We are indebted to Japan for the *Camellia*.[1] In its native country it grows to the size of a large tree. They have

[1] Camellia japonica.

been seen in our English hothouses for more than a hundred years. Though destitute of scent, their broad shining leaves and the varied and gay colours of their blossoms make them great favourites. From one kind a useful oil is obtained, which is much employed in Japan for cooking purposes; and the leaves of another sort are boiled by the ladies of that land, and used for strengthening and embellishing the hair. The camellia is a species of the same genus as the tea-plant.

Now turn for a moment to the *Geranium*,[1] which derives its name from a Greek word signifying "a crane," from a fancied resemblance in its carpels, or fruit, to the beak of that bird; and by the name of "crane's bill" it was formerly known in English gardens.

> Geranium, in the cultured round,
> Than thee no flower more prized is found,
> And none doth seem more fair.

Several species are natives of this country, but the greater number were obtained from foreign lands. These are arranged in three classes, and are called—*erodium*, which in Greek means "heron," whose bill is similar to that of the crane; *pelargonium*, a word from the same language, and signifies a "stork," whose bill is equally long; and the third retains the general name *geranium*.

In reference to the care required in the cultivation of these plants, the poet Cowper thus enforces the necessity of removing the decayed parts as they advance in growth:—

> The soil must be renewed, which often washed
> Loses its treasure of salubrious salts,
> And disappoints the roots; the slender roots

1 Geraniaceæ.

Close interwoven, where they meet the vase
Must smooth be shorn away; the sapless branch
Must fly before the knife; the withered leaf
Must be detached, and where it strews the floor,
Swept with a woman's neatness, breeding else
Contagion, and disseminating death.
Discharge but these kind offices (and who
Would spare, that loves them, offices like these),
Well they reward the toil. The sight is pleased,
The scent regaled, each odoriferous leaf,
Each opening blossom, freely breathes abroad
Its gratitude, and thanks him with its sweets.

Among the favourite flowers of our garden is "the shade-loving *Hyacinth*," [1] though it belongs almost as much to the parlour as the open parterre. There are two species besides the native woodland flower, and which are divided into many hundred varieties. The ancient poets tell us that this flower obtained its name from Apollo, who accidentally killed his young friend Hyacinth, and then turned the last drops of his blood into a flower, that he might bathe in morning dews and live in the pure air of heaven. One species, the *Eastern Hyacinth*, is very abundant in Palestine. "They are to be found," says Lamartine, "in great beauty and variety on the plains of Mount Lebanon;" and Dr. Kitto [2] informs us that "early in the month of February the narcissus, the hyacinth, and the violet, are to be met with in the Holy Land in great profusion."

During the months of summer our gardens are enlivened by the carnation and the pink, two allied plants of the same family. So highly have they been esteemed for their prettiness and fragrance as to receive the Latin name *Dianthus*, or "flower of God."

[1] Hyacinthus orientalis. [2] "Pictorial Palestine."

The *Carnation*[1] is also called the *Clove Pink*, from its perfume resembling that of the clove of commerce. Its first name was derived from a flesh-coloured species which was formerly in great repute. Byron thus employs a simile :—

> Carnation'd like a sleeping infant's cheek.

The garden *Pink*[2] is to be seen in almost every cottage plot, where its flowers and its slender leaves, covered with a sea-green powdery bloom, gladden the eyes of the labourer on his return home from toil—

> For lovelier things were never seen
> Than clustered pinks on grass plots green;
> Or blooming in the neat trimm'd bed,
> By dews of heaven well nurtured.

The two flowers are generally considered to be derived from distinct wild plants.

The *Sweet-william*[3] ranks among the family of pinks, and is called by the French "nosegay of pinks." Its large tufts of dark rose-coloured blossoms, and the ease with which it may be cultivated, make it another favourite in the poor man's plot of ground.

The *Passion Flower*[4] is not only one of the most beautiful, but most curious of plants. Its name was derived from the fancied resemblance of the different parts to the cross and other instruments of suffering of our ever-blessed Redeemer. Some imaginative persons, but with a vain fancy, have supposed that the spear that pierced his side,

1 Dianthus caryophyllus. 2 Dianthus hortensis.
3 Dianthus barbatus. 4 Passiflora.

and the whips that scourged him, and the crown of thorns that encircled his brow, and the hammer and the nails, are



THE PASSION FLOWER.

all to be traced in the flower. The poet Barton has adopted the prevailing sentiment, and turned it to a spiritual account:—

We soar to heaven; and, to outlive
Our life's contracted span,
Unto the glorious stars we give
The names of mortal man.

Then may not one poor floweret's bloom
The holier memory share
Of Him who, to avert our doom,
Vouchsafed our sins to bear?

God dwelleth not in temples rear'd
By work of human hands,
Yet shrines august, by men revered,
Are found in Christian lands.

And may not e'en a simple flower
Proclaim His glorious praise,
Whose fiat only had the power
Its form from earth to raise?

Then freely let the blossom ope
Its beauties—to recall
A scene which bids the humble hope
In Him who died for all.

In one corner of our garden is a small hothouse. Let us enter, that we may take some notice of a class of productions which are curious alike in their appearance and growth. We refer to the *Cacti*, or *Cactus* tribe; or, as it is sometimes called, the tribe of *Prickly Pears*. There are as many as eight hundred species of cacti, all natives of America. In Mexico and Chili they flourish in their pride; from whence they have been brought, and are now cultivated in most parts of the world.

Cacti are remarkable for the absence of all leaves: tufts of prickles instead rise from the stem. These stems are very stout and fleshy. They present a great variety of shapes: some are like the palm of a human hand, others round as the head of a man; some are like long ropes, others of the shape of large melons; some again look like a snake coiled up and asleep; others resemble small barrels or globes: while one seems as though it had a woolly nightcap on its head. Here is one with long ribs down its side, and there is another with sharp angles or corners. In one place is a species which only weighs a few ounces; and not far off is another which is a monster in comparison with its fellow, weighing as much as seven hundred pounds. Some creep along the ground; and some rise up aloft, and spread out their stems like the branches of a chandelier.

Several kinds of cacti bear fruit; that which is known as

the *Indian fig* supplies a favourite table fruit to the people of Mexico. The stalk, being full of juice, is of great value to the fainting traveller on the dry and parched plains; indeed, it has been called the "spring of the desert," and is not much unlike the taste of gooseberries. The wild asses know how to satisfy their thirst with it, first by carefully knocking off the prickly spines with their hoofs, and then safely sucking the cooling juice. And it is this supply of



THE CACTUS.

juice which makes it thrive without rain, and live in our houses with scarcely any water to drink. It may be truly called a "vegetable camel." Both the fruit and juice have also qualities useful in sickness. The stems of the tall cactus are used for wood; others are useful as hedges to fields and fences to houses; and they have been employed

in times of war as an outer protection to forts; the beams, posts, and door-sills of some Indian houses are made from it; cakes are baked with it, and torches are formed of it to light up dark nights: it is for this reason that one kind is called "*Torch-thistle.*"

The most splendid of the cactuses is called the *Night-blowing Cereus.* Its blossoms begin slowly to expand about six o'clock in the evening, and are fully blown by eleven: but by four in the morning they fade, and hang down quite decayed. This is one of the richest and largest of all the flowers that blow. A single blossom often measures a foot across. The outer petals, or parts of the flower-cup, are of dark brown; the inner are a bright yellow, gradually changing in tint to that of the purest white wax, with a yellow centre. These flowers emit a rich perfume, which may be smelt at a great distance. They are said to appear like stars sparkling in the night, and proving what the poet says—

> Darkness shows us worlds of light
> We never see by day.

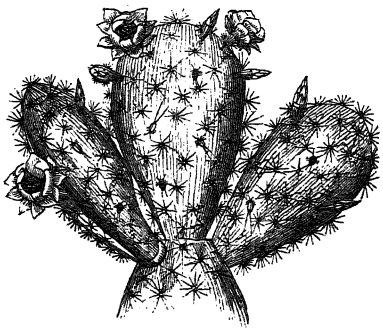
The Cactus House in Kew Gardens possesses some of the rarest of these plants. One is termed the *Visnaga*, which means, in the Spanish language, "a toothpick," as the strong spines of this large kind are used for such purpose after dinner in Spanish America. The species in the Gardens weighs several hundred pounds; but there was, some years since in this place, one three times its size, and weighing one ton. It thrived for a few months, and then died from bruises it had received in its voyage to England.

The *Cereus Venilis* is called the "old man cactus." It is of an oblong shape, about three inches high, of a greyish colour, and covered with long hair-like bristles.

The *Cereus Flagelliformis*, so common in our greenhouses,

is a native of Peru. It is curious for its shoots, which hang down like small ropes (or as some describe them, like cats' tails), over the sides of the flower-pot. This kind of plant may be easily trained on trellises, where it looks very ornamental.

One of the most curious of the cacti is that called the *Nopal*, on which the cochineal insect thrives. The plant contains a red juice which is the food of the insect, and which gives to its body a brilliant tinge. The cochineal,



THE NOPAL.

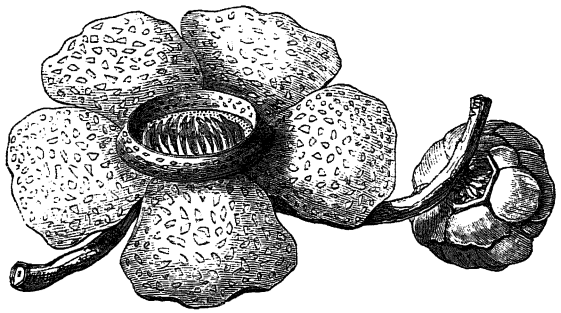
which is so much used by painters and dyers as a scarlet colour, is nothing more than the dried bodies of these little creatures. We may conceive the immense numbers of them from the fact, that from Mexico alone they are exported to the value of £500,000 every year. The stems of this sort of cactus are large and flat; women are employed to brush, with the tail of a squirrel, the female insects from these broad stems, as only this kind are used for the dye. The substance called lac, of which sealing wax is made, is the produce of another species of this insect.

A few *Orchids* are in the same hothouse with the cacti. These plants are described by Sir W. Hooker, "when in flower, as certainly among the most beautiful objects of the vegetable creation, and remarkable for their highly varied forms, great delicacy of texture, and often brilliant colouring; and there is not a month or a day in the year that some one or other is not in blossom." Many are attached to trunks of wood, or placed in wire baskets with moss and bark, or in the husk of cocoa-nuts, and, suspended from the rafters, living and flourishing, as it were, on heat and moisture. As air plants they flourish above all contact with the earth. The flowers often resemble moths, bees, spiders, doves, eagles, snakes, lizards, and frogs; and others have the appearance of the spotted and striped skins of leopards and tigers. So numerous are they, and so varied in appearance, that in the island of Java alone nearly three hundred species have been found. The species of orchids found in England are mostly wild flowers, growing on the ground; but in warmer climes they attach themselves to the stems of other plants, and form elegant appendages to forest trees. Several of this tribe are turned to a practical use. From one orchid[1] is obtained *vanilla*, used by confectioners and in the manufacture of chocolate; another[2] supplies a farinaceous substance, *salep*, from which a nourishing drink is made; and a third,[3] called *putty-wort*, yields a kind of gum, which is employed in America in the mending of crockery. Other orchids are more ornamental than useful, except to the bee and the butterfly, and other free creatures of the air, who obtain from them an abundant supply of food.

There is a limited class of leafless flowers, of which the *Rafflesia Arnoldi*—the largest known flower in the world—

1 Vanilla planifolia. 2 Orchis mascula. 3 Aplectrum hyemale.

may be taken as the most interesting specimen. It is wholly a flower, without either stem or foliage. As a parasite, it grows on the trunks of trees, near to the ground. It was discovered in the year 1818 by Dr. Arnold, who was walking with Sir Stamford Raffles in the island of Sumatra. A Malay servant came running to them, crying, "Come with me; come! A flower very large, beautiful, wonderful!" The doctor went with the man a short distance into a jungle, and there found a gigantic flower attached to the lower



RAFFLESIA ARNOLDI.

branches of a bush. In the middle was a nectary, or cup, over which many flies were hovering. This was so large as to hold twelve pints of liquid. Five large petals surrounded the cup. The whole measured three feet across, and weighed fifteen pounds. The pistils were nearly as large as cow's horns. The colour was a dull red, with yellowish-white spots raised on its surface; but the scent was very offensive, being like putrid beef. The natives of Sumatra call it *krubut*, or "the great flower," and *ambun-ambun*, the "wonder-wonder."

Before we leave the Garden, we will turn from the floral beauties to contemplate some of its lowlier plants, known to us under the common term of HERBS, and which form so large a portion of the wealth of a cottage garden. The cultivation of these shows the skill of the peasant wife, who finds in them real or fancied virtues, and to whom they are of constant use, whether to give flavour to the simple repast, or to heal some of the mishaps of life. Shenstone, describing this rustic botanist, says—

> Herbs too she knew, and well of each could speak,
> That in her garden sipp'd the silvery dew;
> Where no vain flower disclosed a gaudy streak;
> But herbs for use, and physic, not a few,
> Of grey renown, within those borders grew;
> The tufted basil, pun-provoking thyme,
> Fresh balm, and marigold of cheerful hue:
> The lowly gill that never dares to climb;
> And more I fain would sing, disdaining here to rhyme.

"Modern science," says a naturalist, when treating of herbs, "may wrap up the meaning of its epithets in Greek and Latin terms; but in very many cases they are mere translations of these despised 'old, vulgar names.' What pleasure it must have afforded the poor sufferer in body and limb, when he knew that his good neighbour, who came to bathe his wounds, or assuage his inward torments, brought with him such things as *all-heal*, *bruise-wort*, *gout-weed*, and *fever-few* (*fugio*), and twenty other such comfortable mitigators of his afflictions. And then the good herbalist of old professed to have plants which were *all-good:* they could assuage anger by their *loosestrife;* and they had *honesty*, *true-love*, and *heart's-ease*. The cayennes, the soys, the catchups, and extra-tropical condiments of these days were not required, when the next thicket would produce, *poor-man's*

pepper, sauce-alone, and *hedge-mustard;* and the woods and wilds around, when they yielded such delicate viands as, *fat-hen, lamb's-quarters, way-bread, butter-and-eggs*, with *codlins-and-cream*, afforded no despicable bill of fare. No one ever yet thought of accusing old simplers of the vice of avarice, or love of lucre; yet their *thrift* is always to be seen: we have their humble *penny-wort, herb-two-pence, money-wort, silver-weed*, and *gold*. We may smile, perhaps, at the cognomens, or the commemorations of friendships or of worth, recorded by the old simplers, at their herbs, *Bennet, Robert, Christopher, Gerard*, or *Basil;* but do the names so bestowed by modern science read better, or sound better? It has, *Lightfootia, Lapeyrousia, Hedwigia, Schkuhria*, and *Scheuchzeria;* and surely we may admit, in common benevolence, such partialities as, good *King-Henry, sweet-Marjory, sweet-Cicely*, and *Mary-Gold*. The terms of modern science waver daily; names undergo an annual change, fade with the leaf, and give place to others; but the ancient terms, which some may ridicule, have remained for centuries, and will yet remain till nature is swallowed up by art."[1]

Sage[2] is a well-known herb of English gardens; it is a hardy plant, with some pretensions to beauty when in flower, and has been used, even by the Chinese, instead of tea.

Parsley[3] was brought to England from Sardinia about two hundred years ago. Hares and rabbits are said to be so fond of this herb, that they will scent it at a great distance, and break a way through hedges to obtain it.

The pungent *Mint*[4] produces an oil, and in ancient times was strewed by the Jews on the floors of their synagogues. *Sweet Marjoram*[5] signifies "joy of the mountains." *Penny-*

1 Knapp's "Journal of a Naturalist."
2 Salvia officinalis.
3 Petroselinum sativum.
4 Mentha viridis.
5 Origanum majorana.

royal[1] is much used in medicine. *Horehound* is formed into a drink, and is employed to flavour confectionery. And the fragrant *Thyme*[2] was a favourite herb among the Romans, and is now cultivated where bees are hived, to give flavour to their honey.

The many Scripture references to herbs would lead us to conclude that they were no less valued by the Jewish housewife than by the cottager of modern days. Thus we have *Anise*,[3] or *Dill*, a seed of a warm, pungent nature. The plant that produces it abounds in Judea, and the seed is much used in eastern cookery. It is referred to in Matt. xxiii. 23, where our Lord rebukes the inconsistency of the Scribes and Pharisees, who imposed upon themselves rules and ceremonies in small matters, while they neglected the things which were clearly revealed in the law of God.

Coriander seed,[4] common in the south of Europe and in Egypt, has two round seeds in each flower. The eastern people, rich and poor, eat these seeds, to refresh their mouths; they are also mixed with their food.

Cummin[5] abounds in Syria and other warm countries. The flowers are small, of a blue colour, and produce two oval-shaped seeds each, of a bitter taste and unpleasant smell. The appearance of the plant is something like fennel. It was used in medicine, and also put into cheese and bread. When ripe, the seeds are beaten out with rods.[6]

Millet[7] is much cultivated in Palestine, for the purpose of feeding poultry; but many of the poorer sort of Arabs use it as food.[8] The plant has a long reed-like stalk, and soft leaves. It is very fruitful, producing three crops of seed in the year.

1 Mentha pulegium. 2 Thymus vulgaris. 3 Pimpinella anisum.
4 Coriandrum sativum. 5 Cuminum cyminum. 6 Isa. xxviii. 25, 27.
7 Panicum miliaceum. 8 Ezek. iv. 9.

Pulse is a term applied to grain or seeds, growing in pods, with low flowers, and generally with bitter roots. It is much used by the Arabs to make charcoal. Travellers, who feel the cold of eastern nights more sensibly because of the sultry heat of the day, employ it to make their fires.

Lentiles[1] are a kind of pea, which grows on a weak stalk, about a foot and a half high, having eight pairs of small leaves, and ending in a tendril, similar to that which is found on the vine. It bears a pretty flower, which blooms in May; and, in July, ripe pods are produced, each with two seeds or beans. These seeds are boiled with oil and garlick, which make a pottage or soup, of a red or chocolate colour; hence it was called "red pottage," and from which circumstance Esau received his name of Edom, or "red." Dr. Robinson, when on his way to Jerusalem, says, "We bought a supply of lentiles, or small beans, which are common in Syria and Egypt; we found them very palatable, and could well conceive that to a weary hunter, faint with hunger, they might be quite a dainty.



The *Hyssop*[2] is a plant about eighteen inches high, with smooth, sweet-smelling leaves. The flowers are of a lively blue or pink colour, arranged in elegant clusters. From the berries a fine dye is made. It is found in great plenty on the mountains about Jerusalem, and has been met with growing in the crevices of the old walls of that city, which will remind us of



1 Ervum lens. 2 Hyssopus orientalis.

the "hyssop that springeth out of the wall."[1] In the law, hyssop was used to sprinkle, as a ceremonial purification. For this purpose, a bu was tied by a scarlet thread to a handle of ceda the people of Israel were about to depart from Eg were commanded to take a bunch of hyssop, to di blood of a slain lamb, and sprinkle it on the uppe sides of the doors of their houses, that wherever was seen, the destroying angel might pass over, the family in safety[2]—a ceremony that was typ greater deliverance, and by a more costly sacrifice.

1 1 Kings iv. 33. 2 Exod. xii. 22. 3 1 Jo



VIII.

The Field and the Heath.

How sweet I've wandered bosom-deep in grain,
When summer's mellowing pencil sweeps the shade
Of ripening tinges o'er the chequered plain;
Like tawny oat-lands with a yellow blade;
And bearded corn-like armies in parade;
Beans lightly scorched, that still preserve their green;
And nodding lands of wheat in bleachy brown;
And streaking banks, where many a maid and clown
Contrast a sweetness to the rural scene,
Forming the little haycocks up and down,
While o'er the face of nature softly swept
The lingering wind, mixing the brown and green
So sweet that shepherds from their bowers have crept
And stood delighted musing o'er the scene.

Clare.

THE FIELD AND THE HEATH.

THE FIELD: The Daisy—Buttercup—Violet—Forget-me-Not—Heart's-ease—Primrose—Blue-bell—Anemone.—GRASSES: Canary Grass—Timothy Grass—Cock's-foot Grass—Common Bent—Turfy Hair-grass—Water Hair-grass—Floating Sweet Grass—Annual Meadow Grass—Other Grasses.—CEREALS: Wheat—Barley—Oats—Rye—Rice—Maize.—NETTLE TRIBE: Common Nettles—Hemp—Hops.—OTHER FIELD PRODUCTIONS: Flax—Cotton—Silk Cotton—Tea Plant—Sugar Cane.—ROOTS: Potato—Yam.

THE HEATH: Various Heath Plants—Ferns—Lichens—Mosses—Fungi.—CONCLUSION.

WHETHER we ramble forth in "the dewy time of spring," or in "the leafy month of June," we shall find beauty and diversity in nature on every side. In search of these, let us direct our steps to the fields, and there behold the ways of God, who "causeth the grass to grow for the cattle, and herb for the service of man."



FIELD FLOWERS.

It is now the season when the meadows are of a golden yellow with the countless flowers of the buttercup; the hedges

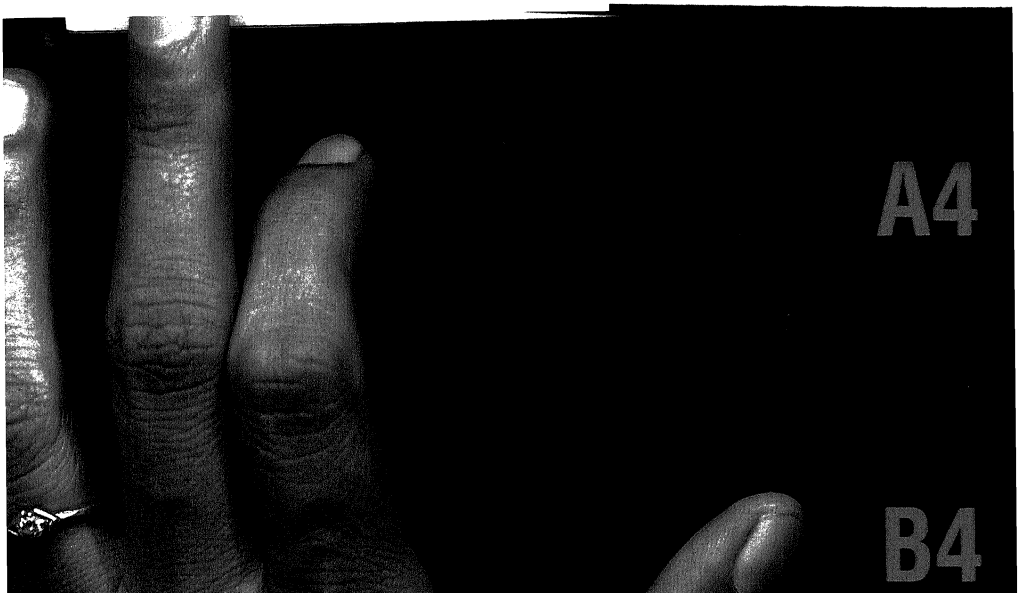
We will contemplate some of these humbler, though not less important, objects of vegetable life; and we shall find field flowers, grasses, cereals, roots, heaths, ferns, mosses, lichens, and sedges, full of interest and instruction, if we are but willing to be taught.

Of the floral natives of the field, the *Daisy*[1] first attracts our eye.

> Star of the mead! sweet daughter of the day!
> Whose opening flower invites the morning ray;
> From the moist cheek and bosom's chilly fold,
> To kiss the tears of eve, the dewdrops cold:—
> Oft have I watch'd thy closing buds at eve,
> Which for the parting sunbeams seem'd to grieve;
> And when gay morning gilt the dew-bright plain,
> Seen them unclasp their folded leaves again;
> Nor he who sung—"The daisy is so sweet!"—
> More dearly loved thy pearly form to greet,
> When on his scarf the knight the daisy bound,
> And dames to tourneys shone with daisies crown'd,
> And fays forsook the purer fields above
> To hail the Daisy, flower of faithful love.
>
> *Leyden.*

As intimated by the poet, the daisy derives its name from unfolding its simple beauties at the dawn of day. Spenser speaks of it as "the little daizie that at evening closes;" and Chaucer, who sung its praise, calls it the "eie of daie." Its name, *Bellis*, signifies "beautiful;" and its French name,

[1] Bellis perennis.



Marguerite, "a pearl." Its pure white flowerets, tipped with crimson, commend it to our notice for its simple beauty; and its first appearance in our meads is welcomed by young and old, for it tells us that summer is at hand.

With the daisy we ever associate its companion, the *Butter-cup*,[1] which was known in days of yore as "gold-cup," "king-cup," and "cuckoo-bud"—names suggestive of its beauty, or of its appearance with the arrival of the cuckoo in the land. At the base of each petal of this flower there is a small cavity, which secretes a minute quantity of pure honey. There are fifteen species of this flower natives of this country; in every one of them is this little honeyed pore to be found. The drop of honey lodged in this cavity is in a singular manner contrasted with the poisonous plant that produces it. Its poisonous qualities are not confined to one part; the flowers, leaves, stem, and root have been found to be equally full of the same juice. And yet, though children so frequently gather the flowers, few, if any, accidents occur, because of their disagreeable taste; nor will cattle eat them for the same reason.

If we look carefully into the shady corners of the field, we shall scarcely fail to find, in its season, the sweet *Violet*,[2] whose odour reminds us of the happy hours of our youth, when we went in search of its delicate, modest blossoms, and binding them together in their own leaves, we carried them home with joy as a fitting gift to those whom we loved the best.

Not far from this spot will be found the *Forget-me-not*,[3] whose bright azure blossoms fringe the borders of many a

1 Ranunculas flammula. 2 Viola odorata. 3 Myosotis palustris.

but he had no sooner seized the flower than he fell over and began to sink. Making a last effort, he threw the flower upon the shore, and at the moment of disappearing beneath the stream, he cried "*Vergiss mein nicht;*" since which time this flower has been made emblematical, and received the name of the Forget-me-not.[1]

Fond memory's flower of azure dye!
Permit thy bard one boon to crave,
When in death's narrow bed I lie,
Oh bloom around my lowly grave;
And if some tender, faithful friend
Should, led by love, approach the spot,
And o'er thy flowers admiring bend,
Then say for me, "Forget-me-not."

Mrs. Opie.

One other simple flower courts the notice of our eye—the *Pansy*, or *Heart's-ease*,[2] which also has borne the singular names of "Love-in-idleness," "Call-me-to-you," "Three-faces-under-a-hood," and "the Flamy." It is alike a native of cold Siberia and sultry Japan, in both of which countries vast beds of this modest flower display their brightest hues. The cultivated and largest species have an agreeable odour.

Early in the spring of the year the *Common Primrose*[3] is found in the corners of our fields, and more profusely on the clayey moist banks of the village lanes. Its name, derived

1 Professor Burnet's "Encyclopædia of Plants," vol. 1.
2 Viola tricolor. 3 Primula vulgaris.



from the word *primus*, "first," expresses its precedence in the order of appearance of most of the floral train. It possesses a simple beauty, and its small, pale blossoms gladden the hearts of rustic children, who welcome it as the forerunner of bright and happy days. Clare, who toiled as a farm labourer, thus addresses the lowly floweret:—

> Welcome, pale primrose, starting up between
> Dead matted leaves of ash and oak, that show
> The every lawn, the wood and spinney through,
> Mid creeping moss, and ivy's darker green:
> How much thy presence beautifies the ground;
> How sweet thy modest, unaffected pride
> Glows on the sunny banks and wood's warm side,
> And where thy fairy flowers in groups are found.

The *Evening Primrose* is of American origin, but has extended its seeds freely through several English counties, where it is found on hedge banks and meadow sides. "The petals of this primrose open in a manner quite remarkable. The calyx, or flower-cup, has small hooks upon its upper extremity, by which it holds the flower together before expansion. The divisions of the calyx open gradually at the lower part, and show the yellow flower, which for some time remains closed at the upper parts by the hooks. The flower then suddenly opens about half way, when it stops, and afterwards gradually completes its expansion, finally opening with a loud noise. It is sometimes half an hour performing this curious operation, which may be witnessed any summer evening."[1] It keeps—

> Its odour to itself all day,
> But when the sunlight dies away,
> Lets the delicious secret out
> To every breeze that roams about.

1 Pratt's "Flowers and their Associations."



WIND FLOWER.

tinged with rose-colour, but which has similar poisonous qualities to the buttercup, we pass to another important class of objects.

The *Grass* tribe[2] embraces the lowly kinds with which we are familiar, as well as the tall sugar cane and robust bamboo of tropical climes. They are all of interest, as affording bread for man, pasturage for cattle, and seeds for the support of the birds of the air.

If we notice with care the ordinary field grass we shall find that every single panicle, or stalk, bears a distinct set of flowers, each part of which is as perfect as the lovely rose, the tulip, or the lily. Various are the sorts of grass which flourish in our meadows, yielding wholesome pasturage for

[1] Anemone nemorosa. [2] *Order*—Graminæ.



our cattle, and also a store for winter use. The culm, or stem, of these plants is hollow, but divided by knots. The length of the leaves is great compared with their breadth.

In some grasses every particular seed has a calyx, or flower-cup, and corolla, or petals; for example, the *Canary grass*, distinguished by the prettiness of its compact head of flowers; or the *Timothy grass*, remarkable for its long spike of flowers, resembling the tail of a cat. The latter frequently appears on the grassy wastes which form an edging to some of our roads.

Another instance, in which each several seed is accompanied by four minute leaves, occurs in the *Cock's-foot grass*, which may be found in almost every place where grass grows. The form of the flower was thought by some in days gone by to be like the foot of the cock. One of the outer pair of leaves belonging to each seed is larger than the other.

A further example of this kind is very common: it is the *Common Bent*, the flowers of which, from their very dark purple colour in some places, give the name of "black bent" to this grass. It is very abundant in every pasture, and may most frequently be seen shooting its clusters at the top of a stem, about ten inches or a foot long, by the sides of ditches, especially in places where the cattle are prevented from cropping it off.

When we enter the opening glades of some woods the eye is often attracted by large tufts of grass, which give rise to a bundle of tall flowering stems, that are remarkable for the purple colour and the extreme fineness of the branches by which the silken flowers are borne. So conspicuous is this grass in some of our woods, that it is difficult to imagine how any one can pass it without some notice. It is the *Turfy Hair-grass;* and a fresh-gathered handful would be

deemed an ornament for the mantel-piece, were it not so common.

In low meadows and verdant nooks, where the water stagnates during the greater part of the year, there may generally be observed tufts of a deep green and rank growing grass, with tall stems, bearing large clusters of delicate flowers; this is known by the name of the *Water Hair-grass*. The leaves are thick, and curiously plaited lengthwise in a single tuft, and will not fail to interest those who occasion-



SLENDER-SPIKED PANIC GRASS.



QUAKING GRASS.

ally enliven a walk of duty or exercise by casting their eyes along the sides of the pathway.

A very pretty example of the grass tribe may be found, during the summer months, on the margin of every stream, in the *Floating Sweet-grass*, the leaves of which are borne on the surface of the running water, in its downward course.

The *Annual Feather grass* is the common kind which grows at the foot of every wall, and soon springs up between the stones and pebbles of a pavement.

Then there are the *Quaking grass;* the *Slender-spiked Panic grass;* the *Long-awned Feather grass;* also the *Riband grass,*[1] often cultivated in gardens, but more frequently seen in a wild state on the borders of rivers. The *Sea-lyme grass,*[2] "which affords by its creeping root a support to our sandy shores, and is of so essential a service to the coasts of



ANNUAL FEATHER GRASS.



LONG-AWNED FEATHER GRASS.

Holland by binding them together, that were it not for the protection of this little plant that country would in all probability be inundated by the advancement of the ocean: a fact of which the industrious people of that land are so well aware, that they carefully cultivate the grass." [3]

[1] Phalaris arumdinacea. [2] Elymus arenaria.

[3] Pratt's "The Field and Garden."

Other kinds, such as *Cat's-tail grass*[1] and *Fox-tail grass*,[2] grow in those of our pastures which are watered by streams. It is pleasant, in its season, to behold the haymakers levelling the tall ranks of grass, or with active toil laying it in ridges, or strewing it around to dry in the sun.

> Wide flies the tedded grain; all in a row
> Advancing broad, or wheeling round the field,
> They spread their breathing harvest to the sun,
> That throws refreshful round a rural smell:
> Or, as they rake the green-appearing ground,
> And drive the dusky wave along the mead,
> The russet haycock rises thick behind,
> In order gay. While heard from dale to dale,
> Waking the breeze, resound the blended voice
> Of happy labour, love, and social glee.

In Turkey some kinds of grass grow to the height of twenty feet; and in Africa a particular sort has its panicles armed with a bunch of thorns.



CORN PLANTS.

In the same tribe as the ordinary grasses are placed the different kinds of grain which form the chief food of man. These have been divided according to their geographical distribution into five divisions:—rice, maize, wheat, rye, barley, and oats. The first three are the most extensive in their distribution over the earth; maize has the greatest range of temperature, but rice supports the greatest number of the human race.

1 Phleum pratense. 2 Alopecurus geniculatus.

Those grasses styled generally the *Cerealia*, from Ceres, a fabled goddess, send up a hollow culm or straw, which is divided into lengths by joints, where the leaves are inserted: one at each joint on the alternate sides of the stem; each leaf embracing the stem for some length, like a sheath. The last leaf of the season serves as a sheath to the newly-formed flower, grasping it for a time so firmly, that the sheath cannot be opened without difficulty. As the flower grows, it bursts open the defence, rises above it, and the leaf then turns backward. The corn plants are annuals; the stems and roots dying after the seed is fully ripened, and sometimes before the latter is matured.

A singular fact may be noticed as to the stems of these plants: they always contain a portion of silex, a substance which abounds in flint and sand, and forms the basis of many precious stones, particularly of those which strike fire with steel. Corn cannot remain in health without the power of attracting fluid silex from the earth, and causing it to assist in forming the stem. The ashes of this part of these plants are in consequence of use in polishing articles formed of wood, ivory, horn, and some of the softer metals.

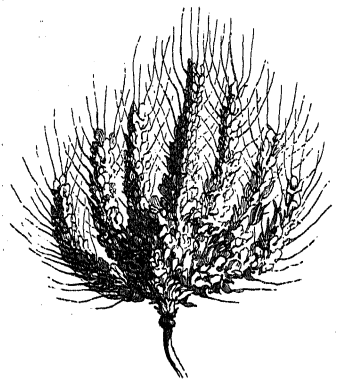
Wheat[1] stands at the head of the cereal grasses for its great productiveness and utility. It is a species consisting of many varieties, several of which are very common natives of Britain. Among these is that which may be termed *Creeping wheat*, but which is better known as "couch" or "quitch," which, so far from being useful, like the cultivated species, is one of the greatest pests in fields and gardens—it being very difficult to clear the grounds which it infests.

Cultivated wheat is of very high antiquity, as grains have

[1] Triticum.

been found inclosed with mummies of Egypt. Some of these being sown by French botanists, produced wheat similar in kind to that now cultivated in the Levant, known as *Syrian wheat*, having more rows of grains on the ear than the sorts usually cultivated in this country.

In Egypt it bears several ears upon one stalk, as described by Pharaoh in relating his dream,[1] and produces very plentifully. The produce of single grains of corn in Egypt —a country for ages famous as "the granary of the world"— was seen by the Rev. W. Jowett. "I picked up at random," says he,[2] "a few stalks out of the thick corn-fields. We counted the number of stalks which sprouted from single grains of seed, carefully pulling to pieces each root, in order to see that it was but one plant. The first had seven stalks, the next three, the next nine, then eighteen, then fourteen. Each stalk would have been an ear."



SEVEN-EARED WHEAT.

In our own land great attention is often paid to the culture of this precious grain; and thus we may sometimes meet with specimens of prize wheat, containing a remarkable number of fine grains in a single ear.

The power of multiplication possessed by this class of cereals is extraordinary. On the 2nd of June, 1766, Mr. Miller, of Cambridge, sowed some grains of the common red

1 Gen. xli. 5. 2 "Christian Researches in Syria," &c.

wheat, and on the 8th of August a single plant was taken up, and divided into eighteen parts, and each part planted separately. A second division produced sixty-seven plants, and a third amounted to five hundred. They were then divided no further. Some of them produced upwards of one hundred ears from a single root, many of which measured seven inches in length, and contained between sixty and seventy grains. The whole number of ears which, by this process, were produced from one grain of wheat, was twenty-one thousand one hundred and nine; which yielded three pecks and three quarters of clear corn; the weight of which was forty-seven pounds, seven ounces; and the whole number of grains was about five hundred and seventy-six thousand, eight hundred and forty!



PRIZE WHEAT.

Wheat-corn is used in Scripture as an emblem. It represents the righteous, and also good doctrine.[1] It is remarkable of this plant, that unless it dissolve into a kind of a pulp, and appear to decay in the ground, it will not spring up and bear fruit. There is an impressive allusion to this fact by our Saviour.[2]



CORN OF PALESTINE.

Wheat is spoken of in connexion with *Tares*.[3] It is supposed that the plant known as *darnel* is meant by the

1 Matt. iii. 12; Jer. xxiii. 28. 2 John xii. 24. 3 Matt. xiii. 24—30.

for a time have a resemblance to each other, but at length a separation is made, and the tares are cast out to be burned. This will remind us of the solemn words of our Lord Jesus Christ: "Whose fan is in his hand, and he will throughly purge his floor, and gather his wheat into the garner; but he will burn up the chaff with unquenchable fire." [1]

Barley[2] is grown to almost as great an extent as wheat, more particularly in the East, as in Egypt and Syria, where it forms the staple grain for making bread. It wants, indeed, that vegetable substance called gluten, which appears peculiar to wheat, or, at least, has not yet been obtained from any other, which makes flour form so good a paste, and is essential in rendering leavened or fermented bread light. But in the East, barley is chiefly used for unleavened bread in the form of thin cakes, so common among the peasantry of Scotland and Ireland. We read of such cakes in very early times. Some, most probably of barley, are mentioned



TILLERING OF BARLEY.

1 Matt. iii. 12.

2 Hordeum.



when the Lord appeared to Abraham in the plains of Mamre, and the patriarch said to Sarah, "Make ready quickly three measures of fine meal, knead it, and make cakes on the hearth."[1] The Arabs of the desert act exactly in this way now, when they entertain strangers, using barley-meal to prepare their hearth cakes.

The origin of barley, like that of wheat, is unknown. Wild species, however, differing from the cultivated sorts, are found in this country; and one in particular, the *Wall Barley*, is very common by waysides and in waste places. It is a low-growing grass, bearing a large bearded ear, not unlike the cultivated barley, but with grains which are too small to be used as bread-corn. Barley is said to tiller, or to spread by tillering, when it puts forth new shoots from the root, or round the bottom of the original stalk.

It is much to be regretted that so great a quantity of barley should be wasted in producing intoxicating liquors, this being the usual grain for distillation.

In the time of James I. the usual bread of the poor in this country was made of barley. *Pearl Barley* is the same plant, only freed from the husk by a mill. The use of barley-broth is in some parts of the kingdom very considerable; and barley-water, a decoction of pearl barley, is a useful beverage.



PANICLE OF OATS.

The great antiquity of *Oats*[2] is not so clearly made out as that of wheat and barley, most probably because this grain is more adapted to the tillage of a colder climate than the other sorts

[1] Gen. xviii. 6.

[2] Avena.

of corn, and therefore not so common, in those parts of the earth from which our chief knowledge of ancient times is derived. The ear of oats is not a single spike, but a panicle, or branches, which arise out of the centre of the stem, and as they grow, they bend over from their weight. Thus it receives the air, rain, and light on each grain.

Oats will grow in soils which will not bear wheat or barley, and in situations not suited to other grain. In the mountainous parts of Scotland they are almost the only grain cultivated. Oatmeal, prepared in various ways, is used very generally in Scotland. Formerly, it was more commonly known in England. In the "Household Book" of Sir Edward Coke, in 1595, there are constant entries of oatmeal for the use of the house, besides "otmell to make the poore folkes porage."

Rye,[1] though used as bread-corn by several nations of Europe, is by no means so important a grain as the preceding ones, being less nutritious and palatable even to the inferior animals. The practice of some farmers affords a remarkable proof of this: they sow a narrow border of rye round their crops of wheat and other grain; and when these are thus fenced in, they are not attacked by poultry, nor even by the wild birds. As these seldom alight in the centre of corn-fields, but in their depredations keep on the outer boundary, they visit the rye, and on finding what they do not like round the field, they proceed no further.

The bread made on the continent of Europe from rye is very black; and as leaven is used, and not yeast, it is sour, and to a stranger very unpalatable. That which is sold in London by some bakers as rye-bread is, on the contrary, well-flavoured and good.

1 Secale.

Let us now glance at foreign fields of cereals, and we begin with *Rice*,[1] a grain of great value as an article of food, which flourishes in warm climates. The spots favourable for its cultivation are those where various substances are washed down by rivers or floods. In this way a field or farm is produced fit for the tiller; and the river which conveyed the soil thither, continues to supply a stock of water to replenish the bank and furrows. Thus, by a simple and beautiful provision, the meadow is formed and irrigated by the same cause. The fields are parted by neat terraces in China; beside which the rills often glide refreshingly, and the little fish sport in the brightness of the summer's sun.

Bishop Heber, when visiting Ceylon, was much gratified by beholding the plant in its natural state. "The verdure of the young rice," he remarks, "is particularly fine; and the fields are really a beautiful sight, when surrounded by and contrasted with the magnificent mountain scenery."



THE RICE PLANT.

Rice requires to be supplied, at one stage of its growth, with abundant moisture, and therefore it will not thrive even in tropical countries, where the soil is uniformly dry. The marshy parts of Hindostan and of Carolina are the chief portions of the globe in which rice is brought to perfection; and owing to some peculiarity of soil or climate, or both, the American rice is so much finer than that of the East Indies, that it generally fetches about double the price in the markets.

1 Oryza.

A no less important grain than rice is *Maize*,[1] or *Indian corn*, which was cultivated in America before the discovery of that continent by Columbus. It is a plant of larger growth in the leaves, the ear, and the grain, than any other sort of corn. It forms the staple crop in North America, where the farmers make it answer a great number of purposes, besides supplying their families with bread.

Maize is also largely cultivated in Mexico; and from the genial nature of the climate, and the general fertility of the soil, the returns yielded to the farmer are most abundant. According to Humboldt, the maize harvest in the valley of Mexico is at the rate of two thousand for one.



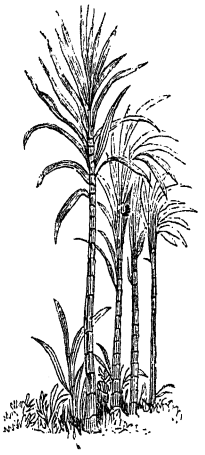
MAIZE.

It may give some idea of the enormous amount of subsistence afforded by the cereal grasses, to state that some years ago, when the population of Britain was much less than it is at present, it was calculated, after a laborious series of investigations, that 416,000,000 bushels of corn were annually consumed by human beings in Britain, besides 100,000 bags of rice. It was estimated that there were upwards of 1,000,000 horses in the country, each requiring as much vegetable food as would support eight men. Then, if we take into further consideration the feeding of cows, swine, and poultry, amounting to many millions, whose provender is to a very large extent obtained from the plants of this order, we shall see that however insignificant in appearance the Grass tribe may be, it is plainly adapted, in a peculiar

1 Zea.

manner, by an all-bountiful Father to the varied wants of his human offspring.[1]

One of the grass tribe which largely ministers to our comfort is the *Sugar Cane*.[2] It is true that we obtain sugar from other classes of plants, but it is chiefly from the cane that we now extract it. This sweet substance was, at its first introduction into England in the middle ages, only seen at banquets, or was employed by the apothecary; but as the refreshing beverages of tea and coffee became common to the people, it was most extensively used. England is now said to be the largest consumer of this article in the world; and what was once found only on the tables of the wealthy, is now in every cottage home. Humboldt says that it was cultivated in China in very remote ages, and that it was known to the Greeks and Romans under the name of honey. It is now grown in the East and West Indies, South America, and in some of the islands of the Southern Ocean.



SUGAR CANE.

The stalk, which is closely jointed, grows to the height of ten or twelve feet; and when in flower, a field of these canes forms an attractive picture. The stem is of a golden yellow colour, and the long leaves which crown it are of a rich dark green; these change to yellow as the cane ripens. From the centre of this tuft of leaves shoots up an elegant arrow-

1 Dr. Carpenter's "Vegetable Physiology."

2 Saccharum officinarum.

shaped head of blossoms, frequently nearly six feet high, and which is crowned by a waving silky plume of delicate lilac and white. When ripe, the canes are cut down, taken to a mill, and crushed under heavy rollers till all the juice is pressed out. From this juice the sugar is made; the draining in the course of manufacture forms molasses. The stalks are used as fuel to boil the juice; but when young and tender are sucked by the poor, who find in them a pleasant nourishment. Travellers say that in some of the South Sea islands almost every child you meet with has a piece of sugar cane in its hand or mouth, and seems to enjoy it as the most delicate article of confectionery.

All the bamboo plants belong to the same order as Grasses. We have already noticed the Bamboo tree;[1] we may again glance at these noble and graceful specimens of their order, that we may introduce an extract from Captain Basil Hall, who describes his emotion when, on awakening one morning at daybreak, during his journey on the coast of Malabar, he looked out from his palanquin and found himself encompassed by bamboos.

"I got up," he says, "drew the door gently back, and looking out, found myself in the midst of one of the most curious and magnificent scenes which my eyes had ever beheld. It appeared as if I were travelling among the clustered columns of some enormous and enchanted Gothic cathedral, compared to which the Minster at York, or the Cathedral at Winchester, would have seemed mere baby-houses: the ground extended on all sides as smooth and flat, and clear of underwood, as if the whole had been paved with grave-stones. From this level surface arose, on every hand, as far as the eye could penetrate into the forest, immense

[1] Page 65.

symmetrical clusters of bamboo, varying in diameter at their base, from six to twenty or thirty feet, or even to twice that width, as I ascertained by actual admeasurement. For about eight or ten feet from the ground, each of these clusters or columns presented a form nearly cylindrical; after which they began gradually to swell outwards, each bamboo assuming for itself a graceful curve, and rising to the height, some of sixty, some eighty, and some even of a hundred feet in the air, the extreme end being at times horizontal, or even drooping gently over, like the tips of the feathers in the Prince of Wales's plume. These gorgeous clusters stood at the distance of fifteen or twenty yards from one another, and being totally free from the interruption of brushwood, could be distinguished at a great distance—more than a mile certainly, in every direction, forming, under the influence of an active imagination, naves, transepts, aisles, and choirs, such as none but a Gothic architect ever dared to conceive. Overhead, the interlacing curves of the bamboos constituted as complete a groined roof as that of Winchester or Westminster, on a scale of grandeur far beyond the bold conception of even those wonderful artists who devised that glorious school of architecture which, in the opinion of many people, has raised the dark centuries immediately subsequent to the era of the Crusades, almost to the level of the days of Pericles."

In passing round the corners of a field, clusters of *Nettles* remind us of the uses of this lowly tribe of plants.[1] Some of this order are found in nearly every land, whether in cold northern climes or in tropical forests. The fibres or back strings of the *Common Nettle*[2] are very tough, and are sometimes used as hemp or flax. A plant called the *Hemp-*

1 *Order*—Urticaceæ. 2 Urtica dioica.

Nettle is sown expressly for this purpose. When ripe, it is steeped in water; the stem decays, and the bark remains in strings. These are dressed like flax, and are woven into strong bags and other useful articles. In some parts of India, fine muslin and calico are made from the fibre of nettles, and in Madagascar strong cordage and sail-cloth. In the spring of the year, the tops of young nettles are boiled and eaten as spinach by our English villagers.



THE NETTLE.

The flowers of the nettle are a cluster of ragged knobs, which, when placed under a microscope, appear as elegant little rose-buds. The stings—and what young person does not know the power of stinging-nettles?—are stiff, hollow hairs, or needles, at each of whose bases is a tiny bag, in which a poisonous juice is secreted. The dagger-like hair, when pressed, makes a wound, and a poisonous juice is ejected up the hollow tube into it, acting in a similar manner to the sting or bite produced by the fang of a serpent. It is only when the gland, or bag, is seated at the base of the hair, that the liquid is poisonous; when on the top of the hair, it is harmless. When, too, nettles are wetted with rain, they do not sting, because the hair has not sufficient strength to pierce the skin; and unless a puncture is made the poison cannot enter, and no sting is felt. Stinging plants may also be handled without harm when dead, if they



STING OF NETTLE MAGNIFIED.

are dried; for though the hair can pierce, the poison is no longer fluid, and cannot enter the wound.

Included in the nettle tribe are several other useful plants, as—

The *Hemp plant*,[1] which grows to five or six feet in height, and which yields a strong fibre. This is woven into stout cloth, or into fine muslin; the latter is called by the Germans "nettle-cloth." In hot countries, a decoction of the leaves produces an effect like unto intoxication, so that the Indians call it "the causer of the reeling gait," and "the laughter-mover." With its juice Hindoo fakeers, or fanatics, excite themselves almost to madness.

The *Hop*[2] is a slender, climbing plant of this order. The flower is in the form of a cone, and in the autumn of the year is of a brownish-yellow colour. Its juice or essence produces similar effects to the preceding; hence the intoxicating properties of beer and ale.

Belonging to this tribe also, strange as it may appear, are the mulberry, the fig-tree, the indian-rubber, the bread-fruit, the upas, the banyan, and the nettle-tree, all of which we have described in our previous rambles.

In looking about upon the wild flowers in our rural rambles, the eye is sometimes arrested by the blue blossoms of the *Flax plant*, of which there are two species, by no means rare flowers in England. They are very much alike, both in appearance and properties. The kind called the *Common Flax*[3] is most generally found in corn-fields, in the

1 Cannabis sativa. 2 Humulus lupulus. 3 Linum usitatissimum.

month of July; and the *Perennial Flax*,[1] which is in bloom a month earlier, is a native of the chalky, hilly pasture. The colour of the flax-flower is a purplish-blue, and the blossoms grow on a stem about a foot and a half high; a few leaves are scattered on it, but both stem and leaves are small in proportion to the size of the flower.

Flax, at a very early period, was cultivated in Palestine, we know from various passages in which it is distinctly mentioned. One of these describes Rahab as preparing the stalks of the flax for use, on the roof of the house;[2] another tells us that the housewife whose industry is praised by Solomon worked with her hands in wool and flax.[3]

It is generally supposed that the culture of flax was introduced into Britain during the first settlement of the Romans; but in the rude state of our forefathers its culture would make slow progress. In the sixteenth century a statute was passed in this country enforcing its culture, and requiring that out of every sixty acres of land one rood should be devoted to flax or hemp-grounds. In Scotland and Ireland it is very largely cultivated, and the flax grown in the latter country supplies the material for its immense linen manufacture.

There is scarcely a plant (not even one of the corn-plants) which can be regarded as of more service to mankind than the flax. From its strong fibres is made the thread or yarn from which is manufactured every kind of linen cloth, from the delicate cambric handkerchief to the stout and durable linen of our couches. The seeds produced by the plant yield, on expression, the linseed oil so extensively used in painting and manufactures; and their emollient nature renders them suitable for medicinal purposes, and valuable as applications in surgery. The refuse of the seeds is used

1 Linum perenne. 2 Josh. ii. 6. 3 Prov. xxxi. 13.

for feeding cattle, and, boiled with chaff, or with a portion of barley, rye, or maize meal, furnishes a valuable and nutritive substance.

Whether we consider the fibre of flax as forming our garments, or the covering of our tables or our beds—as furnishing us with tapes and threads, and the lint so useful in dressing wounds—it is of invaluable service in the domestic economy; neither can its value as an article of commerce be estimated. Nor has the linen served its only purpose when, having been worn threadbare, it becomes the cast-off garment, for then we may bid it

> Go down
> Into the paper mill, and from its jaws
> Stainless and smooth emerge. Happy shall be
> Its renovation, if on its fair page
> Wisdom and truth their hallow'd lineaments
> Trace for posterity. So shall its end
> Be better than its birth.

In the prophet Isaiah we have an allusion made to the smoking flax;[1] and it was probably to the dying, almost extinguished flame of the wick of the lamp, that the prophet refers as a simile of the feeble saint, who perhaps could utter little more than "God be merciful to me, a sinner," yet whose weak endeavours should be smiled on by a God of mercy.

We pass very naturally in imagination from fields of flax to a plantation of *Cotton*,[2] of which plant there are several species grown in different parts of the world. One sort bears rich sulphur-coloured flowers, large and beautiful. After tney fall, a head of seed appears, which, when it is

1 Isa. xlii. 3 2 Gossypium herbaceum.



COTTON PODS.

ripe, bursts open, and discovers the fleecy white cotton. In China, is a cotton tree from which the cloth called "nankeen" is manufactured, in its natural tint. Many ages ago cotton cloth was of so much value as to be only purchased by the most wealthy; but our ships, railroads, machines, and skill have so cheapened it that the lowliest country girl is now dressed in her cotton gown and shawl. The importance of the cotton plant cannot be overrated. The numbers dependant on it for their livelihood, looking at Great Britain only, amounts to millions. As an illustration of this fact, we may give the travels of a pound of cotton in its progress from the raw material into its completed form as a small piece of muslin. The cotton came from the East Indies to London; from London it went into Lancashire, where it was manufactured into yarn; from Manchester it was sent to Paisley, where it was woven; it was sent into Ayrshire next, where it was tamboured; afterwards it was conveyed to Dumbarton, where it was hand-sewed, and again returned to Paisley; whence it was sent to a distant part of the country of Renfrew to be bleached, and was returned to Paisley; it was then sent to Glasgow to be finished; and from Glasgow was sent to London. It is difficult to ascertain the time, precisely, which was necessary to bring this article to market; but it may be reckoned at three years from the time it was packed in India till it was fit for sale as cloth in the merchant's warehouse in London. It must have travelled 5000 miles by sea and 900 by land, and perhaps was afterwards shipped for some part of South America, which would add about 5000 miles more to these distances. It con-

There are two or three kinds of larger trees, which also yield cotton. One of these is the *Silk Cotton tree*,[1] which is seen in almost every village in Sumatra. In appearance, this is one of the most beautiful raw materials which the hand of nature has presented. Its fineness, gloss, and delicate softness, render it to the sight and touch much superior to the produce of the silk-worm; but such is its brittleness and shortness, that it is considered unfit for the reel and loom, and is only used for stuffing mattresses and pillows. The tree is a remarkable one. Some travellers have called it "the umbrella tree." Mr. Marsden compares it to the piece of furniture we call a dumb-waiter.

Our readers have seen the camellia, which has such beautiful flowers: it is to this tribe that the *Tea plant* belongs, which is so much cultivated in China, and also in Burmah, Assam, and other eastern lands. It is an evergreen, with long, narrow, indented leaves of a dark green colour, tapering to a point; and its flower is like a wild white rose, which is succeeded by a small fruit containing several seeds of the size of a pea. Every young person knows the purpose to which the leaves of the tea plant are applied; and often have they heard of excellent bohea, souchong, congou, hyson, pekoe, gunpowder, and imperial: but probably all do not know that the various kinds and qualities of tea are not the product of several different plants, but are the result of

1 Bombax ceiba.

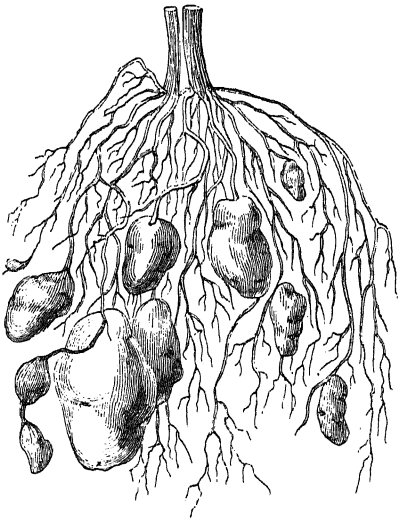
the age of the tree, the climate or soil in which it grows, the time of gathering the leaves, or the mode of preparing them. A traveller says, that in the northern parts of China both green and black teas were made of what we call green-tea plant; and, in some other parts, of the black-tea plant as we term it. If the leaves are gathered about the end of February, they are called imperial tea. The first downy leaf-buds of three-years' old-plants are called pekoe, or pakko, which means white down. Young hyson is a delicate young leaf, called yu-tsëen, meaning before the rains; but is seldom to be had genuine in this country. Dr. Hooker and Mr. Fortune, the latter a traveller in China, say that the natives make both black and green teas from two kinds of shrubs,[1] but each shrub is made to yield both sorts according to the times of the year they are gathered.

Some of the finer kinds of tea are said to grow in such dangerous declivities as to be out of the reach of man. Their leaves are obtained in the following manner:—Every effort is made to provoke the monkeys which dwell among these trees. When this is done, the enraged animals break off the boughs, and fling them at their tormentors.

We now turn to a wholly different class of objects associated with field cultivation. Among the most valued of our productions is the *Potato*,[2] of which Sir Walter Raleigh was the first discoverer of its value, it is said, as food for man. One day he ordered a lot of dry weeds to be collected and burnt. Among these was a quantity of the potato, known then only as mere roots. After the bonfire, they were picked up thoroughly roasted. Sir Walter tasted and pronounced them delicious; and from that they were intro-

1 Thea bohea and Thea viridis. 2 Solanum tuberosum.

duced into use, though slowly at first, until they now supply millions of the human race. Its leaves and fruit are not wholesome; but in the tubers there is abundance of starch, and when cooked they are a pleasant and nutritious food. The pale lilac flowers, as they rise up amidst the dark-green leaves, would be more admired by us were they less frequent in our view.



POTATO, SHOWING ITS ROOTS.

The West Indies and some parts of Africa possess a root which, as an article of food, is of the same value as the potato is to us. It is the *Yam*,[1] whose tender stalks grow to the length of nearly twenty feet, and climb along the trunk or branches of any tree which grows near to it, or else trail

[1] Dioscorea alata.

along the ground. Rough as the tuber appears, its flower is exceedingly pretty, being like round stars of brown velvet, encircled with a rim of gold. The root is flat, and shaped like the human hand; it is of a dark-brown colour on the outside, and white within. When dug out of the earth, the



THE YAM.

roots are placed in the sun to dry. It is largely cultivated in Africa and the West Indies, where the digging of the first yam is accompanied by great joy, and is followed by a feast.

If we now look over the hedge of our field, the wild HEATH spreads out to our view.

> Here the furze,
> Enrich'd among its spines with golden flowers,
> Scents the keen air; while all its thorny groups
> Wide scatter'd o'er the waste are full of life;
> For 'midst its yellow bloom, the assembled Chats
> Wave high the tremulous wing, and with shrill notes,
> But clear and pleasant, cheer the extensive heath.—

The Erica here,
That o'er the Caledonian hills sublime,
Spreads its dark mantle (where the bees delight
To seek their purest honey) flourishes,
Sometimes with bells like amethysts, and then
Paler and shaded like the maiden's cheek
With gradual blushes; other while as white
As rime that hangs upon the frozen spray.

Charlotte Smith.

The *Heath* tribe is among the largest genus of plants; all, except about a dozen, are from the Cape of Good Hope. It is a remarkable fact, that none have been found wild in America; and although in autumn our mountain-sides and moors are completely empurpled with heath-flowers, there are only five or six species natives of Britain. The *Common-heath*, or *Ling*,[1] is used for a variety of economical purposes, but chiefly for making brooms.



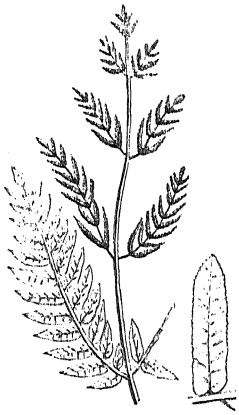
HEATH PLANT.

"The barren waste and mossy bog," says the Rev. Edward Wilson, "are not without their peculiar plants, to cheer the botanist in his rambles. In such wild situations he will not unfrequently meet with the most beautiful specimens: as the *Bog-pimpernel*,[2] with its rose-coloured blossoms; the *Grass of Parnassus*,[3] with its silver-white pencilled corolla; and the *Bog-bean*,[4] with its delicately-fringed petals—flowers which yield to none of our wild plants either in beauty or in elegance."

1 Calluna vulgaris.
2 Anagallis tenella.
3 Parnassia palustris.
4 Menyanthes trifoliata.

By grief and sorrow down,
But hath some memory of the past
To love and call its own.

Of the flowerless plants, the *Ferns* rank the highest. They are the largest among them, and both by their appearance and structure approach much more nearly than either of the others to the herbs and trees, which with their blossoms grace our woods and meadows. These plants are



THE FLOWERING FERN.



THE HARD FERN.

formed chiefly of cells, and the lower orders are composed entirely of them. Many of them possess remarkable beauty. None but those who have examined them beneath the microscope can form any just idea of their exquisite loveliness.

Their green boughs or "fronds," as the botanist calls them, enliven the dim, dark forests, and wave above the tiny wild-flowers which spread over the heath. These fronds, previous to expansion, are usually rolled up in the form of a scroll; but gradually open, and present a broad glossy surface to the sunbeam.

The ferns of our native island, beautiful as they are, must, however, yield in size and symmetry to the ferns of tropical climates. There they rival the graceful palm-tree. One of these tree-ferns we have seen in our visit to the CONSERVATORY.[1]

The *Common Brake*, or *Bracken*, with its green branches, brown at the edge, and its long blackish stem, is known to every visitor of the heath. If we go to the north of England we find its fronds, sometimes a yard in length, bound down on the cottage thatch, or serving as litter for the horses. If we come away to the south, and visit the bright fruit-orchards of Kent, when rich with their ruddy cherries, we see it lying in heaps beneath the trees, ready to be laid over the fruit in the baskets, which is to be sent to the London market for sale. The ashes which it produces when burned yield a quantity of alkali, which is made into balls, and used for soap, and sold under the name of ash-balls; and ovens are heated with the bracken, which is said to yield an intense heat.

A very handsome British fern, which continues through the winter, and looks green and beautiful on the old tower or ruined wall, is the *Hart's Tongue*. The young fronds of this are to be seen in April, both on ruins and in shady wood, and it is in perfection in September. Its form is un-

[1] Page 117.

like most of our British ferns, for it has long, narrow, bright green leaves or fronds; and it presents the common character of masses of brown capsules at the back of the frond. These are arranged in a row at each side of the leaf, slanting inwards towards the middle rib or vein, which is a continuation of the leaf-stalk. This fern is commonly about a foot long; but Professor Hooker mentions having gathered this handsome plant with fronds more than two feet long in the moat at Kenilworth Castle.

At the same season in which the flowering fern rises in graceful beauty in the copsewood, the long feathering



LADY FERN.

plumes of the graceful *Lady-fern* are bowing before the passing winds of summer. This is one of the many species of the shield-fern; and another of this genus, called the *Male-fern*, is to be found, too, in shady places, where the root, composed of many matted fibres, forms a turfish head as large as the finger.

Some peculiarly pretty species of shield-ferns are natives of Great Britain; but the genus is chiefly remarkable as furnishing that very singular plant called the *Scythian* or *Tartarian Lamb*.[1] In earlier times, when marvels, either in the vegetable or animal kingdom, seemed to be perpetuated with diligence, rather than investigated with carefulness, men delighted in the belief of a vegetable lamb. "On the western side of the Volga," says Struys, a traveller of the sixteenth century, "there is an elevated salt-plain of vast extent, but wholly uncultivated and uninhabited. On this plain, which furnishes all the neighbouring countries with salt, grows the *Baromez*, or *Bornitsch* (which in the language of Muscovy means 'a little lamb'): This wonderful plant has the shape and appearance of a lamb, with feet, head, and tail distinctly formed. Its skin is covered with very white down, as soft as silk. The Tartars and Muscovites esteem it highly, and preserve it with great care in their houses, where I have seen many such lambs. The sailor who gave me one of these precious plants found it in a wood, and I had its skin made into an under waistcoat."

This singular narrative of Struys, like many other similar stories, although very much perverted, is founded on truth. A portion of the Baromez does present a rude resemblance in its shape to the figure of an animal, and is covered by a soft downy substance, which may be compared to a silky fleece, of a reddish-brown colour, and which gives to it more the appearance of a dog than a lamb. Fresh plants of this kind are often brought to the market at Macao, but none have ever reached our country alive.[2]

Several very pretty ferns are now commonly reared in

1 Aspidium baromez. 2 Burnett's Outlines of Botany.

this country in closely-glazed cases. The study of them is now not only an out-door recreation; it may be pursued at home. These cases are often placed in the window of the houses of great cities, and seem particularly well fitted for the ferns, as moisture and shade can both be had by this contrivance; and it is delightful to see the bright frond of the fern flourishing in the midst of smoky, crowded places, unhurt by the sudden alternations of cold and heat, or by the heavy fogs which hang in the atmosphere.

Lichens and *Mosses* are remarkable tribes in the vegetable kingdom. They grow on old trees and ancient buildings, covering them with "time stains." The garden palings, the cottage thatch, the mossy stone, the rocky heath-land, have their own vegetable crusts; and one lichen can vegetate even on iron, and another can flourish on the cold and forbidden surface of the stalactite, or congealed water-drops found on the roofs of caves. Some are like misshapen leaves, branches of coral, or stag's horns, or are dense crusts of unsightly form. No glowing tints embellish this class of plants, their brittle crusts being most frequently of a pale whitish green, though some are yellow, and others of a red or brown hue. Miss Twamley gives a true picture of them:

> Some are reddish, some brown, some grey, and some black,
> And they're pucker'd, edged, buttoned, or fringed front and back;
> Some are lying like leather close under your feet:
> Some waving from trees, in the forest, you'll meet.

Lichens are to be found in all parts of the world. In the hot and torrid plains of the African deserts they are encrusting the rock or stone. The scorching sun may shrivel them, but the rain of day, or the nightly dews from heaven,

and on the Polar summits of hills, whose snow seldom melts, there they are sent by God to speak his praise to the lone traveller who reaches these heights. On the granite rocks and forest trees of tropical America they vegetate as freely as in those northern regions of our globe, where they are so indispensable to man and to the animal creation. Humboldt remarks of the mountains of New Andalusia, that wherever scattered rocks afford shade, the lichens and some European mosses may be seen; and the rocks of Teneriffe are as famed for their lichens as are the hills of Lapland.

'Tis Nature's livery round the globe,
Where'er her wonders range:
The fresh embroidery of her robe,
Through every season's change.

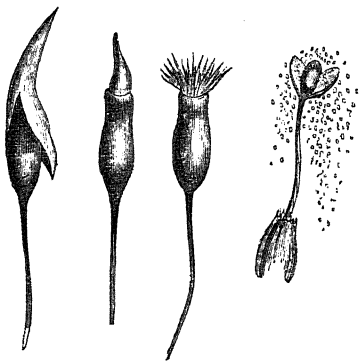
In every clime, on every shore,
They cling, or creep, or twine,—
Where bleak Norwegian winters roar;
Where tropic summers shine,

The *Iceland Moss*, or, as it is more correctly called, the *Iceland Lichen*,[1] is not only a common article of food to the people of that region, but it is also largely exported to other lands. Vast plains and hills of lava are, in Iceland, covered with this lichen, and it attains there a very large size. The soup made from it in the lands of the north of Europe is said to be twice as nutritious as that made of flour. The Icelander, when he gathers his lichen, thanks

1 Cetraria islandica.

the "God who has made bread to grow out of the very stones." It has also been extensively used in our land for ship-biscuits, which have the advantage of remaining uninjured, either by sea-water or insects, during long voyages. Sir John Franklin and his intrepid comrades, in one of their most dangerous voyages, found it of the highest service, when, to relieve the horrors of hunger, they found it growing on the icy rocks.

Equal to the Iceland moss in its usefulness to man and animals, is that well-known lichen of the north, called the *Reindeer Moss*,[1] which, as Linnæus has observed, grows in



SEED VESSELS OF MOSSES.

a, The veil; *b*, lid; *c*, interior cover; *d*, seed-vessel bursting.

greater abundance than any other vegetable throughout Lapland. The Almighty hand which planted it has adapted this humble vegetable to the climate, as well as to the necessities of these cheerless regions. On this herbage the

reindeer of the Laplander subsists during the greater portion of the year.

A species of lichen, which is very common in our native land, may be easily known by its peculiar form. This is the *Cup Moss*, which is, however, in shape more like a wine-glass on a tall stem than a cup. It may be seen in spring on banks, or heaths, or rocky places, appearing at first as a number of grey-green circular patches, but gradually growing into little cups or slender stems, sometimes an inch in length. The plant is of a grey green, and very pretty, but exceedingly brittle.

Among other British lichens are the *Yellow Moss*, the *Tree Beard*, the *Stag's Horn*, and *Chink-wort*. Some lichens are peculiar to one kind of tree, others gather alike on all, as well as on rocks and palings. The fir woods, or moist or moory ground, are arrayed with numbers of these plants, and the fruit orchard-trees are often grey with them.

A large number of lichens are in common use to furnish us with dyeing materials. The *Berelle d'Auvergne* is one of them. The people of Auvergne, in France, scrape the rocks for this plant, and sell it to the manufacturer. It yields a rich purple dye, called *litmus*, and is used very extensively in France, either alone or mixed with some similar lichens. Another species is the famous *Cudbear* of commerce. This plant is used for dyeing woollen cloths of a dull brown tint, also as a purple dye. Another valuable kind, called *Orchill*, produces a fine purple colour.

Specimens of the *Moss* tribe are often the last spots of verdure on which the eye rests in the Arctic regions, as it is also the first verdant thing which gladdens the newly-formed soil. Dr. Lindley mentions that the earliest green crust upon the cinders of the island of Ascension was minute

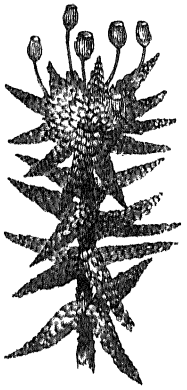
mosses; and adds, that they form more than a quarter of the whole Flora of Melville Island—the most northern station of America on which vegetation has been observed. Crabbe has beautifully described the process of vegetation, either on an island upheaved from the bosom of the ocean, or on a new soil formed by a ruin :—

> Seeds, to the eye invisible, will find
> On the rude rock, the bed that fits their kind:
> There on the rugged stone they safely dwell.
> Till showers and snows the subtle atom swell
> And spread the enduring foliage; then we trace
> The freckled flower upon the flinty base:
> These all increase, till in unnoticed years
> The stony tower, as grey with age, appears
> With coats of vegetation thinly spread,
> Coat above coat, the living on the dead:
> These then dissolve to dust, and make a way
> For bolder foliage, nursed by their decay.
> The long-enduring ferns, in time, will all
> Die and depose their dust upon the wall,
> Where the wing'd seed may rest, till many a flower
> Shows Flora's triumph o'er the falling tower.

Finland, which the ancient writers termed Lapidosa—the stony—has its hills and valleys formed of solid rock, often made beautiful by various plants of the moss tribe.

Ireland, "the paradise of mosses," is considered to have an extent of 2,800,000 English acres of bog land, covered with plants of this tribe. The tract of peat moss, in Lancashire, called the Chat-moss, is an example, on a large scale, of similar spots on English soil. Of little service as any individual moss may be for economic purposes, yet the bog mosses are so valuable in the economy of nature, that few tribes of plants can be said to ultimately contribute more to

vegetable matter, an immense store of fuel, as well as a manure for improving lands under agriculture.



BOG-MOSS.

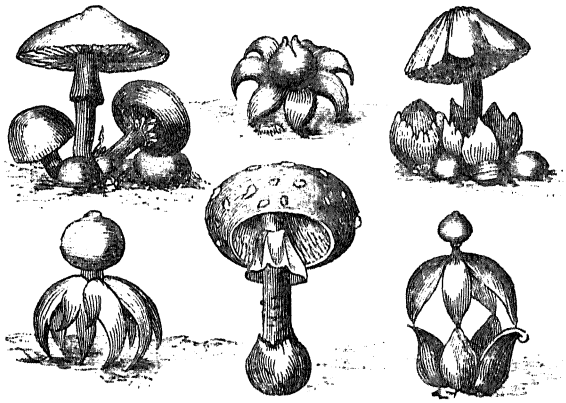
The kind which forms most of our bog lands is the *Spagnum* or *Bog-moss*. It has leaves of a somewhat whitish green. On all the lands of Europe it composes that watery turfy surface on which we so often fear to tread, and whose bright herbage has often tempted the luckless animal to wander and perish there. Among its decaying roots some of our prettiest wild flowers rise up in beauty. The bird gathers it from our lands for his nest. In other lands it is used for some domestic purposes. Linnæus describes the mossy bed of the Laplander, which, being made of the long stems of moss gathered from the land, makes a light and soft couch. They serve him also as a litter for cattle and wicks for his lamp.

We have now descended to the order of *Fungi*, or the *Mushroom* tribe the lowest step on the botanical ladder. The most commonly known specimens are the *Agaric*, of which one thousand species have been described by botanists. That most familiar to us is the *Common Mushroom*[1]

[1] Agaricus campestris.

of our meadows, so largely used in the preparation of catsup. It is found all over Europe, as well as in the northern regions of Asia, Africa, and in North America. One of the best flavoured mushrooms is the *Eatable Boletus*—a very common plant in France, where it is greatly valued. As is also the *Truffle*, to give flavour to made dishes and soups.

Whilst several species of this order are used for human



MUSHROOMS—VARIOUS.

food, others are poisonous. Professor Balfour states "it is not easy to distinguish between them. It has been said that the latter are often highly coloured, have scales or spots on the surface, tough, watery flesh, and grow in clusters on wet ground, and often in the shade; while the wholesome are seldom highly coloured, generally white or brownish, rarely show scales or spots, have brittle flesh, and grow solitary in dry pastures, not in the shade."[1] The greatest care, therefore, should be exercised in their collection and use.

[1] "Encyclopædia Metropolitana," article Botany.

Few except those who have been accustomed to give some attention to the fungus tribe of plants have any idea of the exceeding beauty of some of its species. Now and then, indeed, the bright orange-coloured fungus on the fallen tree, or the white ivory ball which springs up among the moss under our footsteps, calls on us to admire its beauty. Yet, for brilliance of colouring, no tribe of plants in nature can excel the mushrooms. Sometimes the whole plant is tinged with a brilliant hue; at other times the cup is bright with one colour, and the stalk which upholds it, or the gills which lie under its canopy, have one or more varieties of tint. Some are of deep violet hue, others of dark mulberry colour, or pale amethyst. One common species is covered on a summer morning with a bloom like that of a plum, and looks as if strewed with spangles; while one which grows on wet gravel, where there is no grass, has its deep claret-coloured stem covered with a white hoariness, which may be easily rubbed off. Some are of a rich cinnamon colour, and many are variously spotted, and glitter in crimson and gold.

Various species of common *Fungus* are found in singular places. They vegetate between the bark and trunks of trees; others in coal-mines, or in wine-cellars; some in sawdust, which are remarkable for their luminous appearance in the dark. They are the glow-worms of the vegetable kingdom, and their brilliance increases with the heat of the mines. Dr. Lindley found "in the coal-mines near Dresden a species which gave those places the air of an enchanted castle. The roofs, walls, and pillars were entirely covered with them, their beautiful light almost dazzling the eye." Dr. Sowerby discovered a specimen on the top of the cupola of St. Paul's Cathedral.

In some species they grow to a vast size. Dr. Lindley speaks of the huge *boletus* fungus, which in Java "spreads

out its many-handed body from the trunks of aged trees, like a vegetating demon;" and some others are said to be so large that masses of these plants, of a brown colour, have been thought by Europeans travelling in tropical lands to be a number of crouching lions. So rapid is their growth, that Professor Balfour says that the *Bovista gigantea* has grown, in a single night, from the size of a pea to that of a melon.

They, too, furnish a singular illustration of the impulsive force of vegetation, considering that they consist merely of soft and brittle forms. In the town of Basingstoke, some years ago, the pavement, which had not long been laid down, was seen to be uneven, rising up in some parts several inches above the level, and for which no cause could be assigned. At length it was found necessary to take up the stones, when it was discovered that numerous fungi, known as toad-stools, had grown underneath, breaking the mortar which united the pavement, and raised the stones, some of which were eighty pounds in weight, out of their place.[1]

Lastly, there is the minute fungus familiarly known to us as blight on corn; also puff-balls, mildew on damp cloth, and dry-rot in wood, are of vegetable growth, and are classed within this order.

Each plant of some of these fungi is said by Frier to produce upwards of 10,000,000 sporules or seeds. What wonder, then, that the blight on the corn-field should rapidly destroy all the hopes of the agriculturist, and wither away the rich corn in the ear!

We must now bring our rambles through the vegetable domains to a close; for the prospect so greatly enlarges as

[1] Dr. Carpenter's "Vegetable Physiology."

tubers used for food; 32 varieties of arrow root, and 31 of sugar; 200 produce various kinds of drinks; 389 contain balsams and gums, 650 dyes, 330 oils and soaps, 266 aromatic scents, and 88 potash and sodas; 740 are used in building, 250 of fibrous nature are employed in weaving, and 44 in paper-making. Of course this calculation can only be an approach to the real facts, could they be fully ascertained; but here is sufficient to furnish materials for a lifetime of study and for a library of books.

Enough has been seen, both in the vast and the minute, to illustrate the beneficence of God in so arranging the vegetable productions of the earth as best to satisfy the wants and gratify the tastes of its inhabitants; and by their varied distribution to awaken a desire of interchange, and thus lead to commercial intercourse and the advancement of civilisation. We have beheld

> How various trees their various fruits produce,
> Some for delightful taste, and some for use;
> How sprouting plants enrich the plains and wood,
> For physic some, and some design'd for food;
> How fragrant flowers, with different colours dyed,
> On smiling meads unfold their gayest pride.
> — Review these numerous scenes, at once survey
> Nature's extended face, then, sceptics, say,
> In this wide field of wonders can you find
> No art discover'd, and no end design'd?
> But oh! how dark is human reason found,
> How vain the man with wit and learning crown'd;

How feeble all his strength when he essays
To trace dark Nature, and detect her ways,
Unless he calls its Author to his aid,
Who every secret spring of motion laid;
Who over all his wondrous works presides,
And to their useful ends their causes guides:
These paths in vain are by proud doubters trod;
There's no philosophy without a God.

Sir Richard Blackmore.

It is further hoped that while these rambles have conveyed some useful information, and enforced some practical lessons, a desire has been awakened to obtain more ample and scientific knowledge, such as will be readily found in botanical works of established repute; for the more accurately and minutely these marvellous objects are examined, the more is there to be learned of the wisdom and skill displayed in their creation.

Nor have we forgotten, as Dr. Chalmers recommends, "to extract a sentiment of piety from the works and appearances of nature. It has the authority of sacred writers upon its side; and even our Saviour himself gives it the weight and solemnity of his example: 'Behold the lilies of the field; they toil not, neither do they spin; yet your heavenly Father careth for them.' He expatiates on the beauty of a single flower, and draws from it the delightful argument of confidence in God. He gives us to see that taste may be combined with piety, and that the same heart may be occupied with all that is serious in the contemplations of religion, and be at the same time alive to the charms and loveliness of nature."

A still higher authority, even the apostle Paul, speaks in the same connexion of our Lord Jesus Christ as alike the Creator and the Saviour of the world: "All things were

to himself, and that we who were "sometime alienated and enemies in our mind by wicked works, yet now hath he reconciled in the body of his flesh through death, to present us holy, and unblameable, and unreprovable in his sight."[1]

May we revere Him for his creative power and skill, and for all the benign agencies which flow from his providential care; and at the same time rest on him as the foundation of our hope for eternal life. Then shall we be prepared to enter into the pious sentiments of these closing lines:-

"Speak, for thy servant heareth, Lord!"
How varied are the ways
Whereby thy wisdom, O my God,
The truth to man conveys.
'Tis thine to make thy will be known
By many a speaking sign:
Thy will, howe'er revealed, to heed
With answering heart be mine.

Thou speakest in CREATION'S works;
Where'er I gaze abroad,
In nature's miracles I hear
The voice of nature's God:
I hear thy voice of bounteousness
Breath'd in the silent shower,
And in the awful thunder-storm
I hear thy voice of power.

[1] Col. i. 16—22.

Thou speakest in THY BOOK, with words
 Man's eloquence above;
I hear thee of affection tell
 Surpassing mother's love:
Of sinners from destruction saved,
 Of blood in ransom given,
Of faith that works by charity,
 And hope that rests in heaven.

Then, when by conscience' secret voice,
 Thou wouldest, Lord, be heard,
Or by thy works of Providence,
 Or by thy living Word:
May thy blest Spirit purify
 My not-unwilling ear;
And grant that what thou speakest thus,
 Thy servant's soul may hear.

Bishop Mant.

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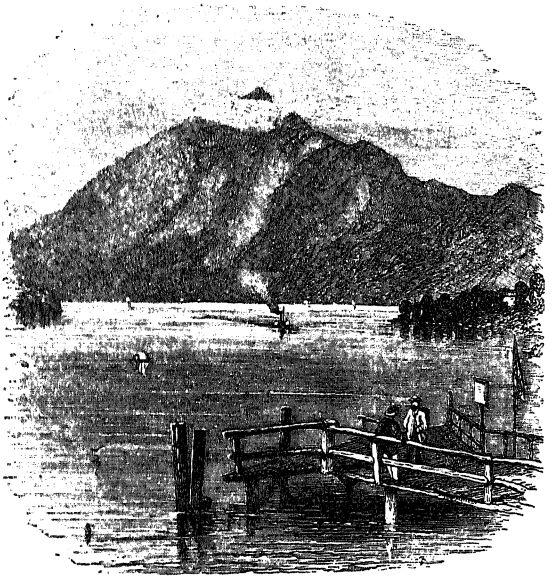
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LONDON: KNIGHT, PRINTER, BARTHOLOMEW CLOSE.

56, PATERNOSTER ROW,
65, ST. PAUL'S CHURCHYARD, and 164, PICCADILLY.



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